JVC

HR-J271MS/J471MS/J677MS/J777MS

No. 82811

JVC

VICTOR COMPANY OF JAPAN, LIMITED
VIDEO DIVISION

S40894

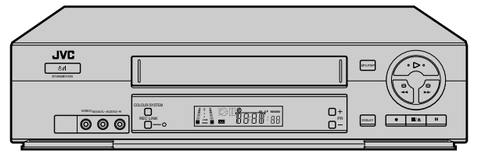
Printed in Japan

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J271MS/J471MS/J677MS/J777MS



G-CODE™
SHOWVIEW™
Hi-Fi VHS PAL NTSC

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J777MS/J677MS)*

GENERAL

Power requirement	
Rating	: AC 110 V – 240 V∿, 50/60 Hz
Operating	: AC 90 V – 260 V∿, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Operating position	: Horizontal only
Dimensions (WxHxD)	: 400 mm x 94 mm x 278 mm
Weight	: 3.3 kg
Format	: VHS standard
Maximum recording time	
(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM)
	: 160 min. with T-160 video cassette (NTSC)
(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
	: NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 250 lines (PAL/MESECAM)
	: 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000 Hz (Hi-Fi audio)
Input/Output	: RCA connectors (IN x 2, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 99 positions (+AUX position)
Tuning system	: Frequency synthesized tuner
Channel coverage	: VHF (Low) 42 MHz – 175 MHz (High)175 MHz – 470 MHz UHF 470 MHz – 870 MHz
Aerial output	: UHF channels (Adjustable E28 – E60)
Memory backup time	: Approx. 6 months Estimated figure based on supplied fresh battery; actual performance may differ.

ACCESSORIES

Provided accessories	: RF cable, Infrared remote control unit, "R6/UM-3" battery x 2, Lithium battery CR2025, Conversion plug*

*Not provided in certain areas.

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The following table lists the differing points between Models (HR-J271MS, HR-J471MS, HR-J677MS, HR-J777MS) in this series.

	HR-J271MS	HR-J471MS	HR-J677MS	HR-J777MS
VIDEO HEAD	2 HEAD	4 HEAD (DA4)	4 HEAD (DA4)	4 HEAD (DA4)
HiFi AUDIO	NOT USED	NOT USED	USED	USED
HiFi LEVEL METER	NOT USED	NOT USED	USED	USED
FRONT VIDEO/AUDIO INPUT(RCA)	NOT USED	USED	USED	USED
VCR PLUS+	NOT USED	NOT USED	NOT USED	SHOW VIEW
REMOTE PAUSE	NOT USED	NOT USED	USED	USED
STILL/PAUSE/FRAME ADVANCE	REDUCED NOISE	NOISELESS	NOISELESS	NOISELESS

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape 3) Spacers 5) Barrier
   2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

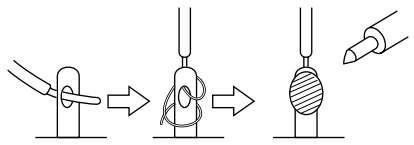


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

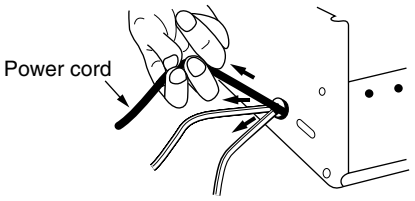


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.
    Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.
    Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) Connector part number : E03830-001
    2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
    3) Replacement procedure
    (1) Remove the old connector by cutting the wires at a point close to the connector.
    Important : Do not reuse a connector (discard it).

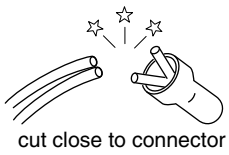


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

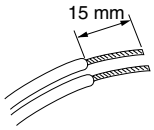


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

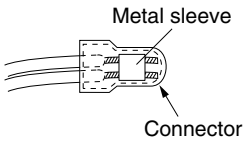


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

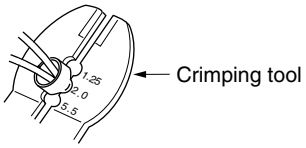


Fig.6

(5) Check the four points noted in Fig.7.

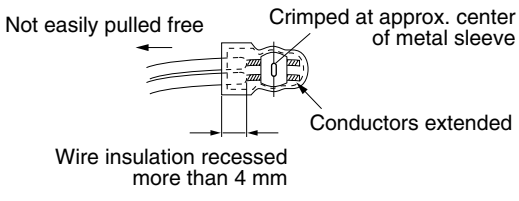

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

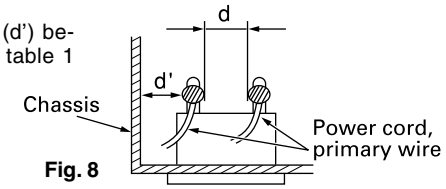


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

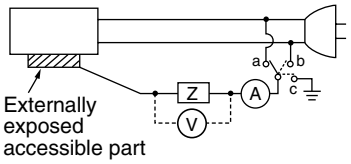


Fig. 9

5. Grounding (Class 1 model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

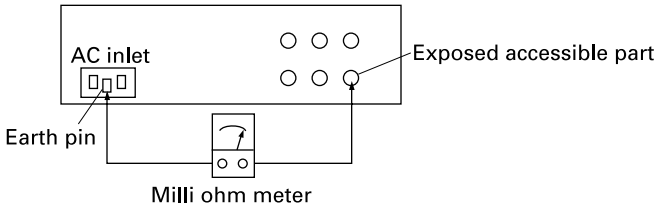


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 miute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦ R ≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

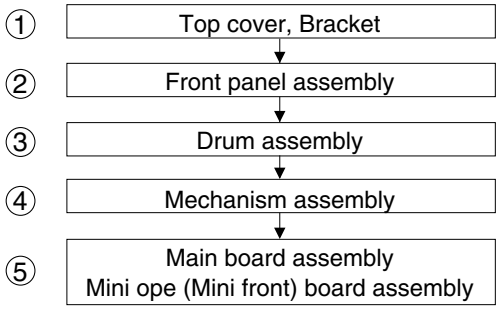
Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

<Example>

Step/ Loc No.	Part Name	Fig. No.	Point	Note
①	Top cover, Bracket	D1	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a), CN1(WR1a), 2(S1c)	<Note 1>

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig. No. showing procedure or part location.
(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

Note:

- ***The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.***

(5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

Step/ Loc No.	Part Name	Fig. No.	Point	Note
①	Top cover Bracket	D1	2(S1a), (S1b) 2(S1c)	
②	Front panel assembly	D2	7(L2)	<Note 2a> <Note 2b>
③	Drum assembly (Cleaner assy)	D3	3(S3), CON1(WR3a), CN1(WR3b) (L3c)	<Note 3>
④	Mechanism assembly	D4	2(S4a), (S4b), (S4c), 2(L4), CN1(WR4)	<Note 3> <Note 4>
⑤	Main board assembly	D5	(S5), 6(L5a)	
	Mini ope board assembly [HR-J677MS/J777MS]		(L5b), CN7003(WR5)	<Note 3> <Note 5>
	Mini front board assembly [HR-J271MS/J471MS]		(L5b) CN7001(WR5)	

<Note 2a>

- When reattaching the Front panel assembly, make sure that the door opener ⓐ of the Cassette holder assembly is lowered in position prior to the reinstallation.

<Note 2b>

- When reattaching the Front panel assembly, pay careful attention to the switch lever not to make it touch the switch knob ⓑ of the Main board assembly from the side.
(If the switch knob of the Main board assembly is damaged, cassette loading is impossible.)

<Note 3>

- Be careful not to damage the connector and wire etc. during connection and disconnection.
When connecting the wire to the connector, be careful with the wire direction.

<Note 4>

- When it is required to remove the screws (S4a) retaining the Mechanism assembly, please refer to the “Procedures for Lowering the Cassette holder assembly”(See on page 1-2).
- When removing the Mechanism assembly only, unhook the two spacers connecting it with the Main board assembly with pliers from the back side of the Main board assembly first, and then remove the Mechanism assembly.
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors on the Main board assembly (D3001: LED, Q3001/Q3002: Start sensor, Q3002/Q3003: End sensor).

<Note 5>

- When removing the PC Support from the bottom chassis, take care not to damage the locking portion of the PC Support.

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two screws unscrewed when removing the Mechanism assembly.

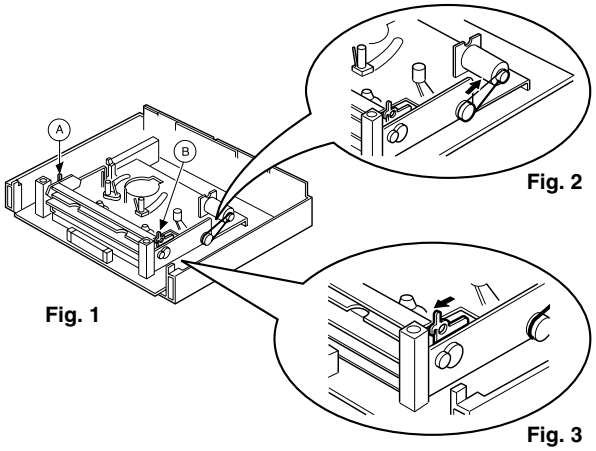


Fig. 1

Fig. 2

Fig. 3

Turn the loading motor pulley in the direction as indicated by Fig.2. As both Ⓐ and Ⓑ levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of Ⓐ, Ⓑ, Ⓑ, Ⓐ. When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

Procedures for Lowering the Cassette holder assembly

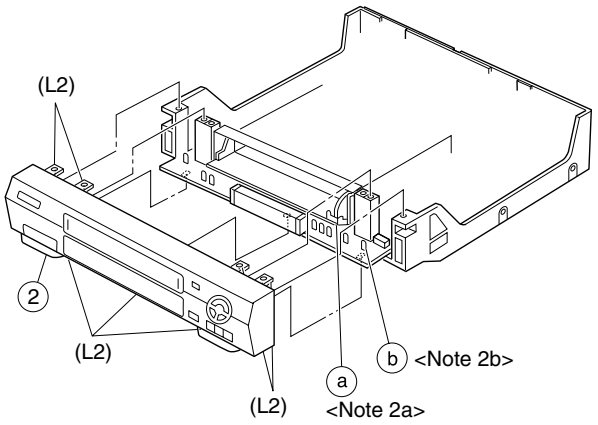


Fig. D2

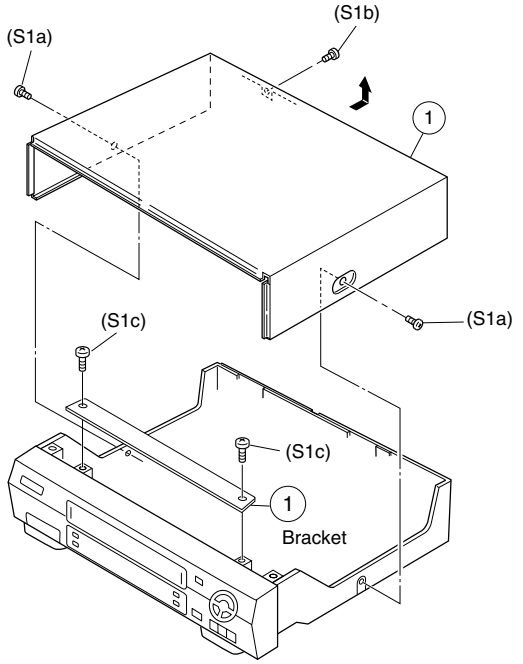


Fig. D1

NOTE: When installing the DRUM assembly, secure the screws (S3) in the order of ⓐ , ⓑ , ⓒ .

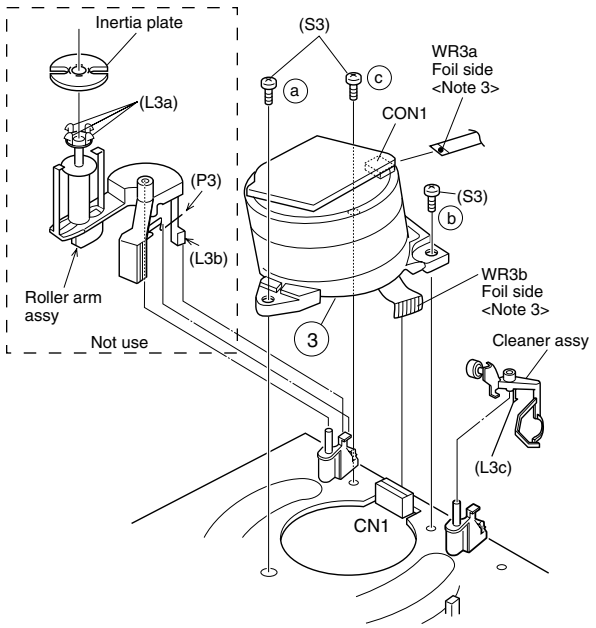


Fig. D3

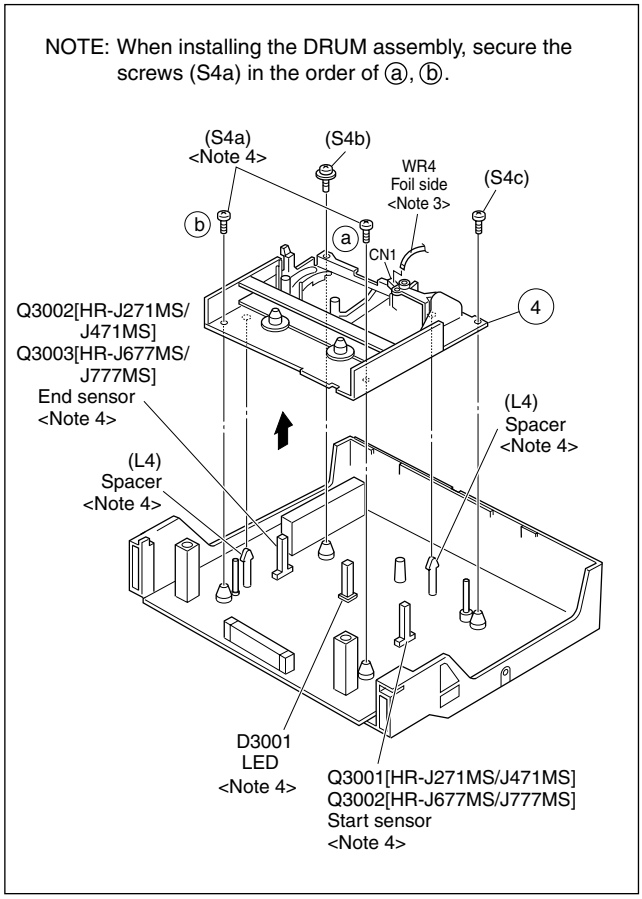

NOTE: When installing the DRUM assembly, secure the screws (S4a) in the order of ⓐ, ⓑ.
(S4a)
<Note 4>
(S4b)
WR4
Foil side
<Note 3>
(S4c)
b
a
CN1
4
Q3002[HR-J271MS/
J471MS]
Q3003[HR-J677MS/
J777MS]
End sensor
<Note 4>
(L4)
Spacer
<Note 4>
(L4)
Spacer
<Note 4>
D3001
LED
<Note 4>
Q3001[HR-J271MS/J471MS]
Q3002[HR-J677MS/J777MS]
Start sensor
<Note 4>

Fig. D4

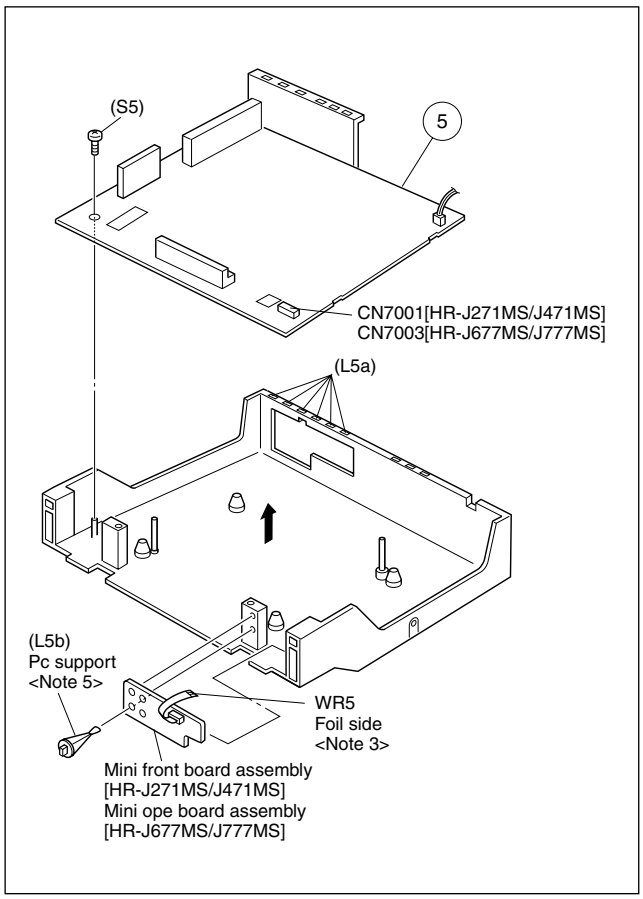

(S5)
5
CN7001[HR-J271MS/J471MS]
CN7003[HR-J677MS/J777MS]
(L5a)
(L5b)
Pc support
<Note 5>
WR5
Foil side
<Note 3>
Mini front board assembly
[HR-J271MS/J471MS]
Mini ope board assembly
[HR-J677MS/J777MS]

Fig. D5

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Mechanism assembly, this unit is constructed so as to allow the Mechanism and Main board assemblies to be removed together from the Bottom chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

(1) Remove the Top cover, Bracket, Front panel assembly, and Mini ope (Mini front) board assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Mechanism assembly. (Refer to the "Procedures for Lowering the Cassette holder assembly" on page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(3) Take out 2 screws Ⓐ, 1 screw Ⓑ, 1 screw Ⓒ and 1 screw Ⓓ as shown in Fig. 1-4-1.

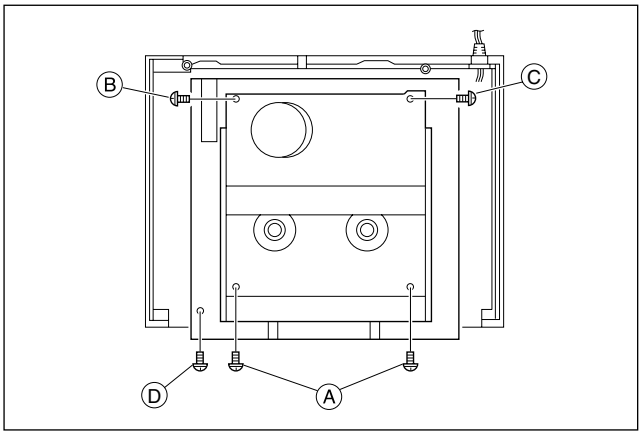


Fig. 1-4-1

(4) Remove the Main board and Mechanism assemblies together while holding the edge of the Main board assembly. At this stage be careful of the power cord and prongs of the jacks on the back side. (See Fig. 1-4-2.)

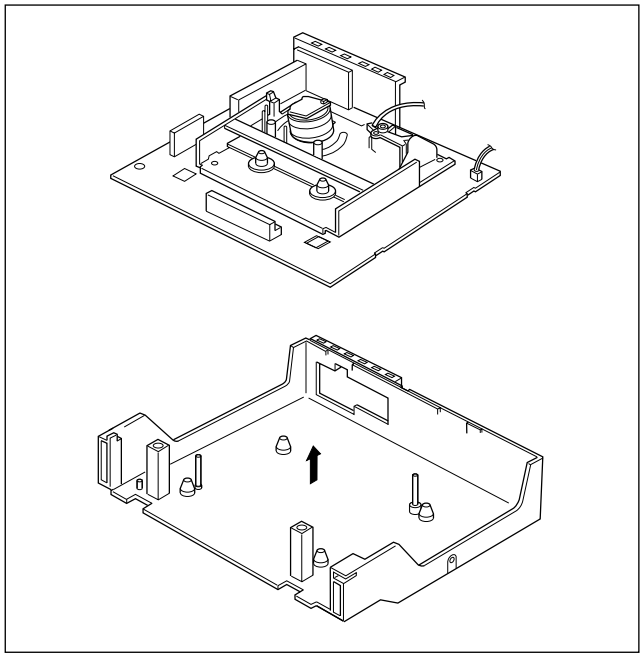


Fig. 1-4-2

(5) Connect the power cord to the wall socket, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)
(6) When performing a diagnosis or repair of the Main board assembly with a cassette tape in place, turn on the power, insert a cassette tape, and turn over the Main board and Mechanism assemblies together.

Note:

- ***When carrying out diagnosis and repair of the Main board assembly in the service position, be sure to ground both the Main board and Mechanism assemblies.***
  If they are improperly grounded, there may be noise on the playback picture or the FDP counter display may move even when the mechanism is kept in an inoperative status.
- ***When performing diagnostics of the tape playback or recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode during diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position.***

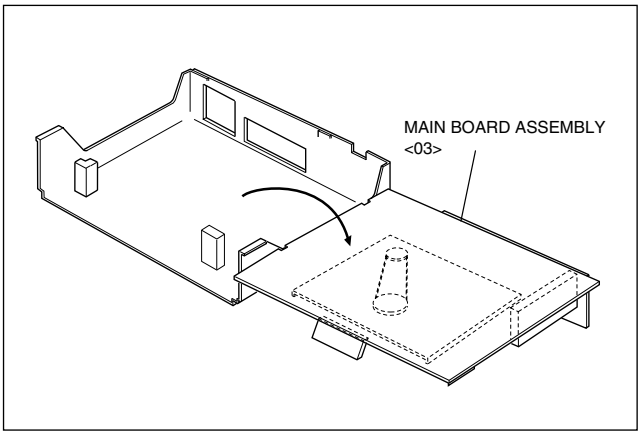


Fig. 1-4-3

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

(1) Disconnect VCR from AC.
(2) Connect TPGND and TP7001(TEST) on the Main board assembly with a jump wire.
(3) Connect VCR to AC.
(4) Press the POWER button.
(5) With lock levers ⒶⒷ on the left and right of the Cassette holder assembly pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers ⒶⒷ , refer to the “Procedures for Lowering the Cassette holder assembly” on page 1-2 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

[HR-J271MS, HR-J471MS]

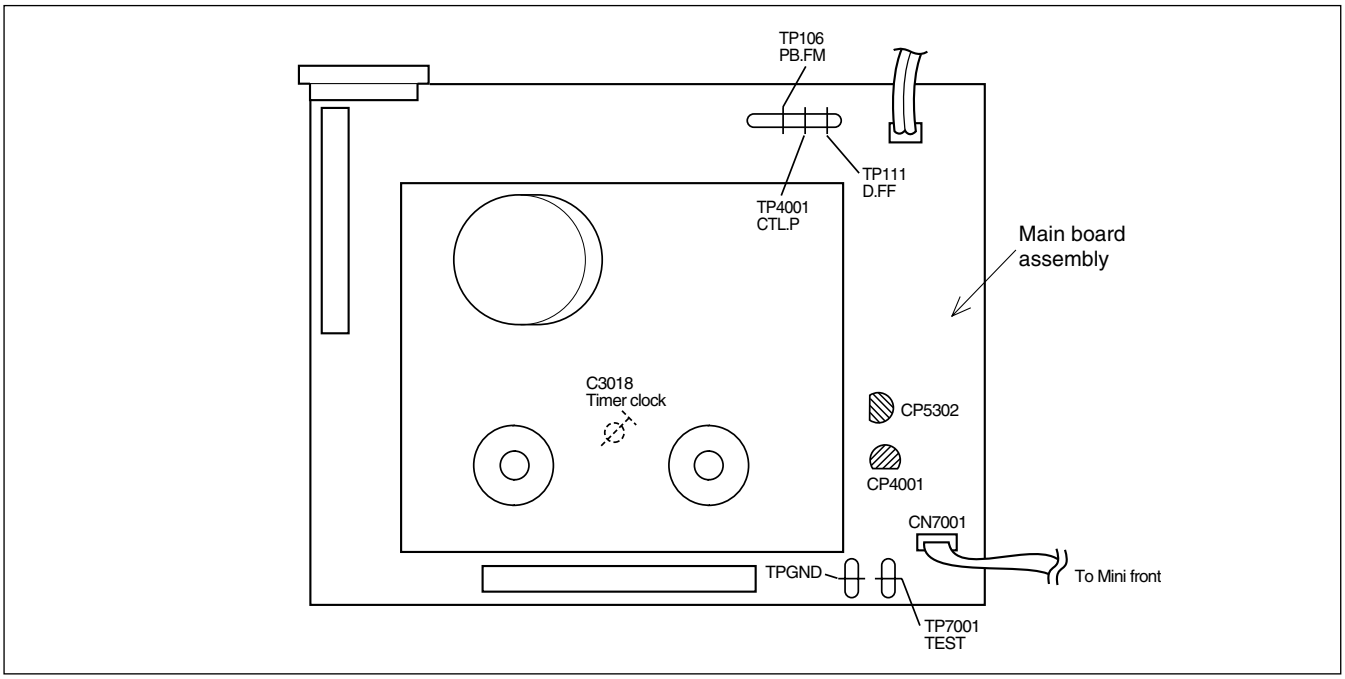


Fig. 1-5-1

[HR-J677MS, HR-J777MS]

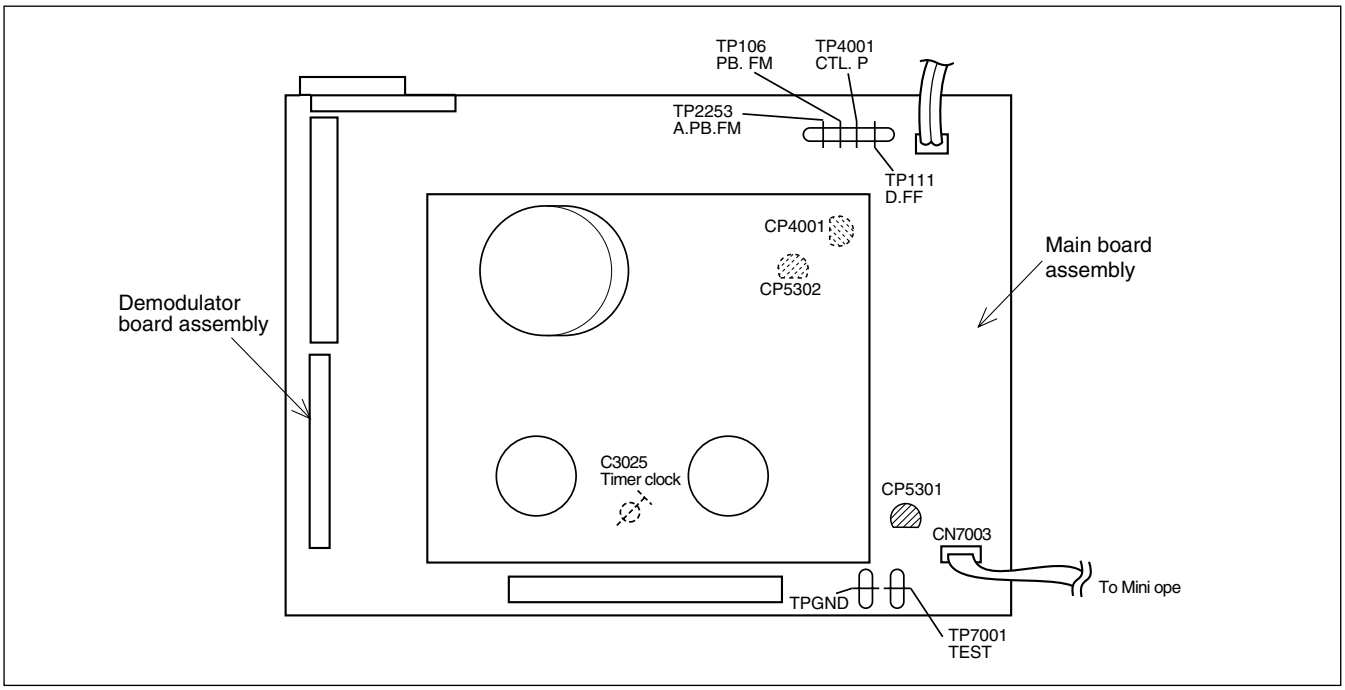
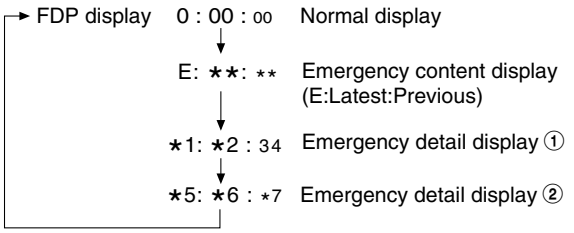


Fig. 1-5-2

1.6 EMERGENCY DISPLAY FUNCTION

This unit has a function for storing the history of the past two emergencies (EMG) and displaying them on each FDP. With the status of the VCR and mechanism at the moment an emergency occurred can also be confirmed.

FDP display switching



Notes:

- ***The emergency detail display ①② show the information on the latest emergency.***
  It becomes " – – : – – : – –" when there is no latest emergency record.
- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

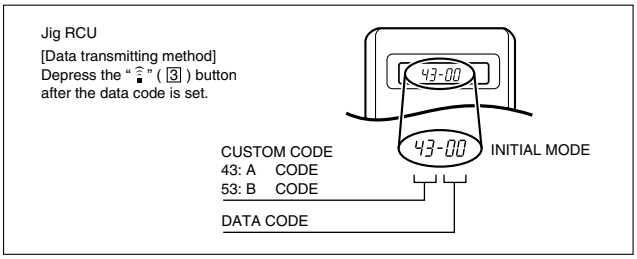
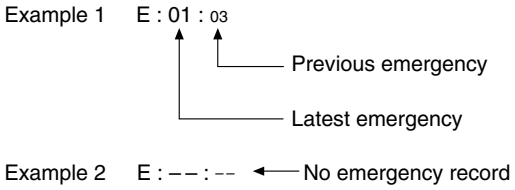


Fig. 1-6-1 Jig RCU [PTU94023B]

1.6.1 Displaying the emergency information

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the emergency content in the form of "E:★★:★★".



Note:

- ***For the emergency content, see "1.6.3 Emergency content description".***

(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the emergency detail information ① in the form of "★1 : ★2 : 34".

★1 : Deck operation mode at the moment of emergency
★2 : Mechanism operation mode at the moment of emergency
3– : Mechanism sensor information at the moment of emergency
–4 : Mechanism mode position at the moment of emergency

Note:

- ***For the emergency detail information ①, see "1.6.4 Emergency detail information ①".***

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the emergency detail information② in the form of "★5 : ★6 : ★7".

★5 : Type of the cassette tape in use ①.
★6 : Winding position of the cassette tape in use
★7 : Type of the cassette tape in use ②(Winding area)

Note:

- ***For the emergency detail information ②, see "1.6.5 Emergency detail information ②".***

(4) Transmit the code "59" from the Jig RCU once again to reset the display.

1.6.2 Clearing the emergency history

(1) Display the emergency history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the emergency display.

(Y292-03e)

1.6.3 Emergency content description

Note: ***Emergency contents "E08/E09" are for the model with Dynamic Drum (DD).***

FDP	CONTENT	CAUSE
E01: Loading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the loading direction, [E:01] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the loading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	① The mechanism is locked in the middle of mode transition. ② The mechanism is locked at the unloading end due to the encoder position reading error during mode transition. ③ Power is not supplied to the loading MDA.
E03: Take Up Reel Pulse EMG	When the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. However, the reel EMG is not detected in STILL/SLOW modes.	① The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1) The idler gear is not meshed with the take-up reel gear; 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3) The take-up reel sensor does not output the FG pulse. ② The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The supply reel sensor does not output the FG pulse. ③ Power is not supplied to the reel sensors.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	① The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. ② The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. ③ The drum control voltage (DRUM CTL V) is not supplied to the MDA. ④ Power is not supplied to the drum MDA.
E05: Cassette Eject EMG	When the eject operation does not complete in 3 seconds after the start, [E:05] is identified, the pinch rollers are turned off and stopped, and the power is turned off. When the cassette insertion operation does not complete in 3 seconds after the start, the cassette is ejected. In addition, when the operation does not complete within 3 seconds after the start, [E:05] is also identified and the power is turned off immediately.	① The cassette cannot be ejected due to a failure in the drive mechanism of the housing. ② When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. ③ The sensor/switch for detecting the end of ejection are not functioning normally. ④ The loading motor drive voltage is lower than specified or power is not supplied to the motor (MDA). ⑤ When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in STILL/SLOW/FF/REW modes.	① The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). ② The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. ③ The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. ④ Power is not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	① The SW 5 V power supply circuit is shorted with GND. ② The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	① The absolute value sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. ④ The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	① The FG sensor is defective. (The soldered parts have separated.) ② The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) ③ Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. ④ The power to the sensor is not supplied. (Connection failure/soldering failure) ⑤ The FG pulse is not sent to the System Controller CPU. ⑥ The tilt motor is defective. (The soldered parts have separated.) ⑦ The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) ⑧ The tilt motor drive MDA - IC is defective. ⑨ Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). However, note that the reel EMG is not detected in the SLOW/STILL mode.	① The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The FG pulse output from the supply reel sensor is absent. ② The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The FG pulse output from the take-up reel sensor is absent. ③ The power to a reel sensor is not supplied.
EC1 or EU1: Head clog warning	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:C1] or [E:U1] is identified and recorded in the emergency history. During the period in which a head clog is detected, the FDP and OSD repeat the "3-second warning display" and "7-second noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

Table 1-6-1

1.6.4 Emergency detail information ①

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest emergency can be confirmed based on the figure in EMG detail information ①.

[FDP display]

∗1 : ∗2 : 34

∗1 : Deck operation mode at the moment of emergency
∗2 : Mechanism operation mode at the moment of emergency
3– : Mechanism sensor information at the moment of emergency
–4 : Mechanism mode position at the moment of emergency

Note:

- ***In the Deck operation mode/Mechanism operation mode/ Mechanism mode position, the contents of the code that is shown on the FDP differs depending on the parts number of the System Control microprocessor (IC3001) of the VCR.***
  For the microprocessor parts number that starts with the two letters "MN", refer to the Table of MN and for parts number with "HD", refer to the Table of HD.

∗1 : Deck Operation Mode
[Table of MN]

Display	Deck Operation Mode
00	Mechanism being initialized
01	STOP with pinch roller pressure off (or tape present with P.OFF)
02	STOP with pinch roller pressure on
03	POWER OFF as a result of EMG
04	PLAY
0C	REC
10	Cassette ejected
20	FF
21	Tape fully loaded, START sensor ON, short FF
22	Cassette identification FWD SEARCH before transition to FF (SP x7-speed)
24	FWD SEARCH (variable speed) including x2-speed
2C	INSERT REC
40	REW
42	Cassette identification REV SEARCH before transition to REW (SP x7-speed)
44	REV SEARCH (variable speed)
4C	AUDIO DUB
6C	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8C	REC PAUSE
8D	Back spacing
8E	Forward spacing (FWD transport mode with BEST function)
AC	INSERT REC PAUSE
AD	INSERT REC Back spacing
CC	AUDIO DUB PAUSE
CD	AUDIO DUB Back spacing
EC	INSERT REC (VIDEO + AUDIO) PAUSE
ED	INSERT REC (VIDEO + AUDIO) Back spacing

[Table of HD]

Display	Deck Operation Mode
00	STOP with pinch roller pressure off (or tape present with P.OFF)
01	STOP with pinch roller pressure on
04	PLAY
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH (variable speed)
4C	AUDIO DUB
6E	INSERT REC (VIDEO+AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO+AUDIO) PAUSE

∗2 : Mechanism Operation Mode
[Table of MN]

Display	Mechanism Operation Mode
00	Command standby (Status without executing command)
02	POWER OFF by EMG occurrence
04	Moving to the adjacent position in the LOAD direction
06	Moving to the adjacent position in the UNLOAD direction
08	Cassette ejection being executed
0A	Cassette insertion being executed
0C	Tape being loaded
0E	Tape being unloaded
10	Mode transition to STOP with pinch roller compression ON
12	Mode transition to STOP with pinch roller compression OFF
14	Mode transition to STOP with pinch roller compression OFF as a result of POWER OFF
16	Mode transition to STOP with pinch roller compression ON as a result of POWER ON
18	Mode transition to PLAY
1A	Mode transition to FWD SEARCH
1C	Mode transition to REC
1E	Mode transition to FWD STILL/SLOW
20	Mode transition to REV STILL/SLOW
22	Mode transition to REV SEARCH
24	Mode transition from FF/REW to STOP
26	Mode transition to FF
28	Mode transition to REW
2A	4 sec. of REV as a result of END sensor going ON during loading
2C	Short FF/REV as a result of tape sensor going ON during unloading
2E	Mechanism position being corrected due to overrun
80	Mechanism in initial position (Dummy command)

[Table of HD]

Display	Mechanism Operation Mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)

3– : Mechanism Sensor Information
[Common table of MN and HD]

Display	Mechanism Sensor Information			
	S-VHS SW	REC SAFETY SW	START SENSOR	END SENSOR
0–	VHS	Tab broken	ON	ON
1–	VHS	Tab broken	ON	OFF
2–	VHS	Tab broken	OFF	ON
3–	VHS	Tab broken	OFF	OFF
4–	VHS	Tab present	ON	ON
5–	VHS	Tab present	ON	OFF
6–	VHS	Tab present	OFF	ON
7–	VHS	Tab present	OFF	OFF
8–	S-VHS	Tab broken	ON	ON
9–	S-VHS	Tab broken	ON	OFF
A–	S-VHS	Tab broken	OFF	ON
B–	S-VHS	Tab broken	OFF	OFF
C–	S-VHS	Tab present	ON	ON
D–	S-VHS	Tab present	ON	OFF
E–	S-VHS	Tab present	OFF	ON
F–	S-VHS	Tab present	OFF	OFF

–4 : Mechanism Mode Position
[Table of MN]

Display	Mechanism Mode Position
-0	Initial value
-1	EJECT position
-2	Housing operating
-3	U/L STOP position
-4	Tape being loaded/unloaded (When the pole base is located on the front side of the position just beside the drum)
-5	Tape being loaded/unloaded (When the pole base is located on the rear side of the position just beside the drum)
-6	Pole base compressed position
-7	FF/REW position
-8	Between FF/REW and STOP with pinch roller compression ON
-9	STOP with pinch roller compression OFF
-A	Between STOP with pinch roller compression OFF and REV
-B	REV (REV STILL/SLOW) position
-C	Between REV and FWD
-D	FWD (FWD STILL/SLOW) position
-E	Between FWD and PLAY
-F	PLAY position

[Table of HD]

Display	Mechanism Mode Position
–0	EJECT position
–1	U/L STOP position
–2	Tape being loaded/unloaded (When the pole base is located on the rear side of the position just beside the drum)
–3	FF/REW position
–4	STOP with pinch roller pressure off
–5	REV (REV STILL/SLOW) position
–6	FWD (FWD STILL/SLOW) position, PLAY position
–7	Intermediate position during transition between other mechanism modes

Note:

- ***As the display is always "–7" at any intermediate position between mechanism modes, the position of transitory EMG may sometimes not be locatable.***

1.6.5 Emergency detail information ②

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information ②.

[FDP display]

★5 : ★6 : ★7

★5 : Type of the cassette tape in use ①
★6 : Winding position of the cassette tape in use
★7 : Type of the cassette tape in use ②(Winding area)

Note:

- ***EMG detail information② is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.***

★5 : Cassette tape type ①

Display	Cassette Tape Type ①
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Notes:

- ***Cassette tape type ① is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.***
- ***If other value than those listed in the above table is displayed, the cassette tape type is not identified.***

★6 : Cassette tape winding position

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 22 sections using a hex number from "00" to "15".

"00" : End of winding
"15" : Beginning of winding
"FF" : Tape position not identified

★7 : Cassette tape type ② (Winding area)

Display	Cassette Tape Type ②	
00	Cassette type not identified	
07	Small reel, thick tape	T-5
08 - 0E	C cassette, thick tape	TC-10
09 - 15	C cassette, thick tape	TC-20P
0A - 0B	Small reel, thick tape	T-20
0A - 16	C cassette, thin tape	TC-30
0A - 16	C cassette, thin tape	TC-40
0D - 0F	Small reel, thick tape	T-40
11 - 14	Small reel, thick tape	T-60
15 - 18	Small reel, thick tape	T-80/DF-160
17 - 1A	Small reel, thick tape	T-80/DF-180
19 - 1D	Small reel, thick tape	T-100
1D - 21	Small reel, thick tape	T-120/DF-240
1E - 1F	Small reel, thin tape	T-140
1F - 23	Small reel, thick tape	T-130
21 - 23	Small reel, thin tape	T-160
21 - 23	Small reel, thin tape	T-168
22 - 24	Small reel, thick tape	DF-300
22 - 24	Small reel, thin tape	T-180/DF-380
22 - 24	Small reel, thin tape	T-210/DF-420
22 - 23	Large reel	T-5
23 - 24	Large reel	T-10
25 - 26	Large reel	T-20
27 - 29	Large reel	T-30
29 - 2B	Large reel	T-40
2D - 2F	Large reel	T-60

Note:

- ***The values of cassette tape type ② in the above table are typical values with representative cassette tapes.***

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001) [HR-J677MS, HR-J777MS]

PIN NO.	LABEL	IN/OUT	FUNCTION
1	CTL(+)	IN/OUT	CTL(+)SIGNAL
2	SVSS	-	GND
3	CTL(-)	IN/OUT	CTL(-)SIGNAL
4	CTLBIAS	-	CTL BIAS VOLTAGE
5	CTLFB	-	NC
6	CTLAMPOUT	OUT	CTL PULSE OUTPUT
7	CTLSMTIN	IN	CTL PULSE INPUT
8	CFG	IN	CAPSTAN FG PULSE INPUT
9	SVCC	-	SYSTEM POWER
10	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
11	IND(L)	IN	AUDIO INPUT (LCH) FOR THE FDP AUDIO INDICATOR
12	IND(R)	IN	AUDIO INPUT (RCH) FOR THE FDP AUDIO INDICATOR
13	NORM/MESEC/S	IN	NORMAL MODE:L/MESECAM MODE:M/NC
14	A.ENV/ND(L)	IN	AUDIO PB FM ENV.INPUT/NON HiFi MODE:L
15	END SENSOR	IN	END SENSOR
16	NC	-	NC
17	START SENSOR	IN	START SENSOR
18	NC	-	NC
19	SCR ID	-	NC
20	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
21	RF AGC	-	NC
22	AFC	IN	TUNING LOCK
23	AVSS	-	GND FOR ANALOG CIRCUIT
24	CTL GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
25	CAP REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
26	LSB	IN	MECHANISM MODE DETECT(B)
27	LSC	IN	MECHANISM MODE DETECT(C)
28	LSA	IN	MECHANISM MODE DETECT(A)
29	RC	IN	REMOTE CONTROL DATA INPUT
30	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY
31	PROJECT 50 IN	-	NC
32	POWER DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
33	PROJECT 50 OUT	-	NC
34	STB/TEST	OUT	STROBE SIGNAL (FOR FDP DRIVER)
35	LMC1	OUT	LOADING MOTOR DRIVE(1)
36	LMC2	OUT	LOADING MOTOR DRIVE(2)
37	LMC3	OUT	LOADING MOTOR DRIVE(3)
38	P.CTL(H)	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
39	P.SAVE(L)	-	NC
40	V_UP(H)	-	NC
41	SIDE BAND GAIN	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
42	NC	-	NC
43	VSS	-	GND
44	SAT_CTL	-	NC
45	VCC	-	SYSTEM POWER
46	JSA	-	NC
47	JSB	-	NC
48	REC SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
49	I2C DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT
50	I2C CLK	OUT	SERIAL DATA TRANSFER CLOCK
51	S.DATA TOSYS	IN	SERIAL DATA TRANSFER OUTPUT TO THE FDP DRIVER
52	S.DATA FRSYS	OUT	SERIAL DATA TRANSFER OUTPUT TO THE ON-SCREEN IC
53	S.CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
54	SP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
55	SW2	OUT	TUNER SYSTEM ”L” MODE:L
56	LOCK(L)	IN	TUNING PLL LOCK DETECT:L

PIN NO.	LABEL	IN/OUT	FUNCTION
57	TU CE	OUT	CHIP ENABLE OF THE TUNER UNIT
58	SW1	OUT	TUNER SYSTEM "L" MODE:H
59	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
60	TU CLK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
61	TU DATA	OUT	TUNING DATA
62	FWE	-	NC
63	NMI(L)	-	NC
64	X2	-	TIMER CLOCK (32.768 kHz)
65	X1	-	TIMER CLOCK (32.768 kHz)
66	RES(L)	-	RESET TERMINAL (RESET ON:L)
67	OSC1(IN)	-	MAIN SYSTEM CLOCK (10MHz)
68	VSS	-	GND
69	OSC2(OUT)	-	MAIN SYSTEM CLOCK (10MHz)
70	VCC	-	SYSTEM POWER
71	MODE	-	NC
72	TU A MUTE(H)	OUT	TUNER AUDIO MUTE CONTROL (MUTE:H)
73	TU V MUTE(H)	-	NC
74	MESECAM(H)	OUT	MESECAM:H
75	I2C CLK2	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
76	I2C DATA2	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
77	SYNC DET(H)	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
78	OSD CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
79	EE(L)	-	NC
80	R.PAUSE	IN	REMOTE PAUSE CONTROL
81	FMA_SHORT(H)2	-	NC
82	VCC	-	SYSTEM POWER
83	FMA_SHORT(H)1	-	NC
84	VSS	-	GND
85	SP_SHORT(H)	OUT	MODE SELECT
86	LP_SHORT(H)	OUT	MODE SELECT
87	H.REC ST(H)	OUT	HiFi AUDIO SOUND RECORDING START
88	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
89	PAL_PB(H)	OUT	PAL MODE:H
90	3.58NTSC(H)	OUT	3.58NTSC MODE:H
91	NC	-	NC
92	NC	-	NC
93	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE:L)
94	SECAM(H)	-	NC
95	SECAM_DET	-	NC
96	NC	-	NC
97	NC	-	NC
98	C.SYNC	IN	COMPOSITE SYNC
99	A.FF	OUT	AUDIO FF OUTPUT
100	V.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
101	CAPPWM	OUT	CAPSTAN MOTOR CONTROL
102	DRUMPWM	OUT	DRUM MOTOR CONTROL
103	NC	-	NC
104	N.REC ST(H)	OUT	NORMAL AUDIO SOUND RECORDING START
105	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL (REC:H)
106	NC	-	NC
107	DPG	IN	DRUM PICKUP PULSE INPUT (SWITCHING PULSE)
108	DFG	IN	DRUM FG PULSE INPUT
109	VCC	-	SYSTEM POWER
110	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
111	VSS	-	GND
112	CTLREF	-	CTL REFERENCE VOLTAGE

SECTION 2
MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

(1) Unplug the power cable of the main unit before using your soldering iron.
(2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
(3) Do not randomly handle the parts without identifying where the trouble is.
(4) Exercise enough care not to damage the lugs, etc. during the repair work.
(5) When installing the front panel assembly, be sure to hook the lug on the back side of the cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE.)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
(2) Unload the cassette by manually turning the loading motor of the mechanism assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-3a.)
(3) Bring the pole base assembly (supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
(4) Move the top guide toward the drum while holding down the lug Ⓐ of the bracket retaining the top guide. Likewise hold part Ⓑ down and remove the top guide. Section Ⓒ of the top guide is then brought under the cassette lid. Then remove the top guide by pressing the whole cassette tape down. (See Fig.2-1-3b.)
(5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

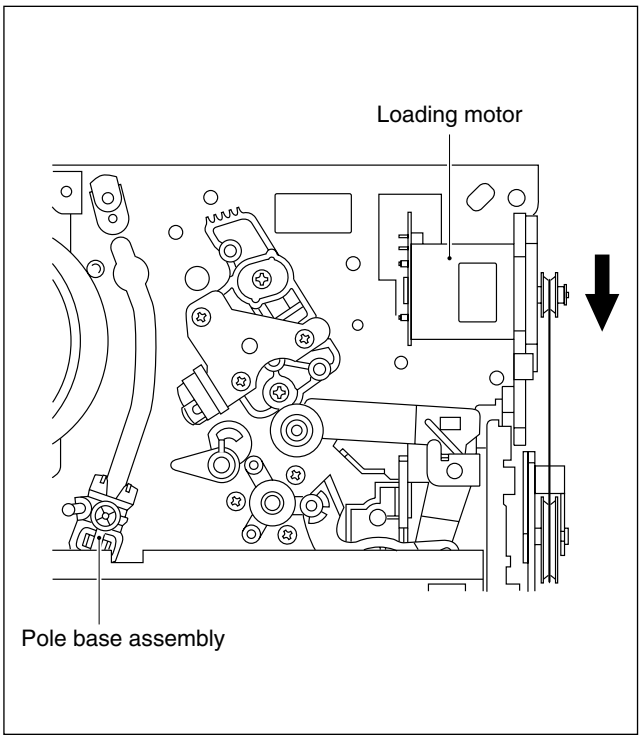


Fig. 2-1-3a

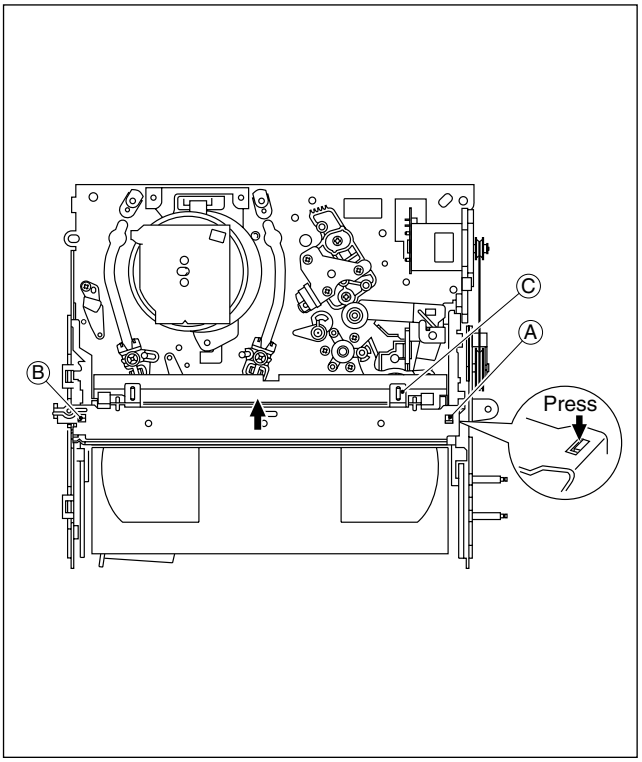


Fig. 2-1-3b

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

(1) Unplug the power cable and remove the top cover, front panel assembly and others so that the mechanism assembly is visible. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)

(2) While keeping the tension arm assembly of the mechanism assembly free from tension, pull the tape on the pole base assembly (supply or take-up side) out of the guide roller. (See Fig.2-1-3c.)

(3) Take the spring of the pinch roller arm assembly off the hook of the press lever assembly, and detach it from the tape. (See Fig.2-1-3d.)

(4) In the same way as in the electrical failure instructions in 2.1.3-1(4), remove the top guide.

(5) Raise the cassette tape cover. By keeping it in that position, draw out the cassette tape case from the cassette holder and take out the tape.

(6) By hanging the pinch roller arm assembly spring back on the hook, take up the slack of the tape into the cassette.

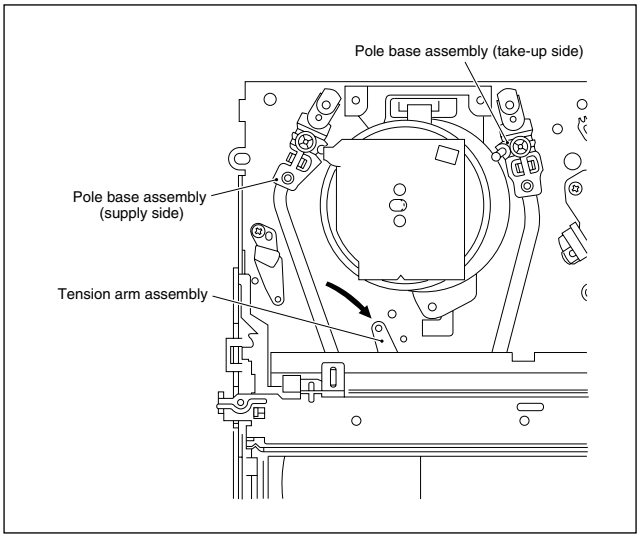


Fig. 2-1-3c

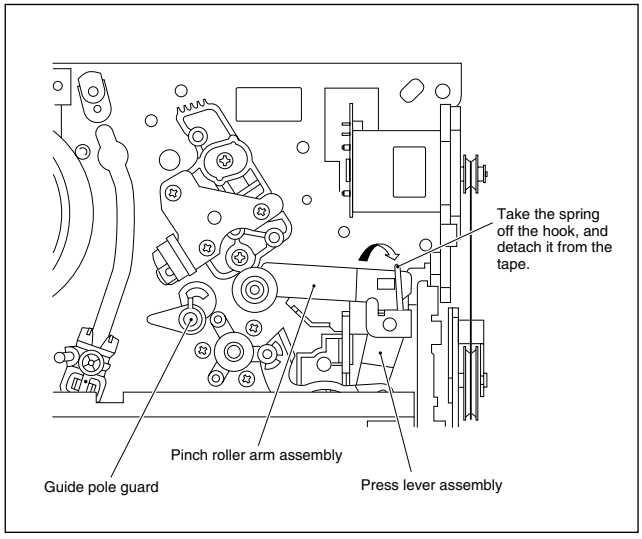
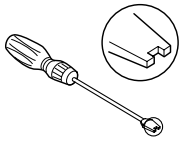
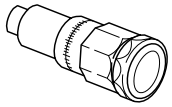
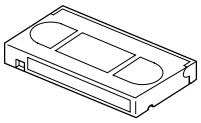
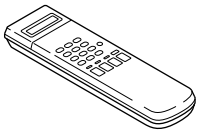
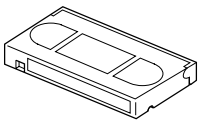
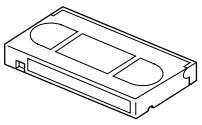


Fig. 2-1-3d

2.1.4 Jigs and Tools Required for Adjustment

Roller driver PTU94002	A/C head positioning tool PTU94010	Torque gauge PUJ48075-2
		
Back tension cassette gauge PUJ48076-2	Jig RCU PTU94023B	
		
Alignment tape (SP, stairstep, PAL) MHPE	Alignment tape (LP, stairstep, PAL) MHPE-L	
		

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

In this chapter, the two mechanism speeds are described by comparing the speeds of the standard type and the high-speed FF/REW type.
It is possible to distinguish between these two types of mechanism by the diameters of their capstan pulleys.
The capstan pulley diameter for the standard type is approx. 32 mm.
The capstan pulley diameter for the high-speed FF/REW type is approx. 43 mm.
For information on the different parts used in the two mechanism types, please refer to the “Replacement of major parts”.

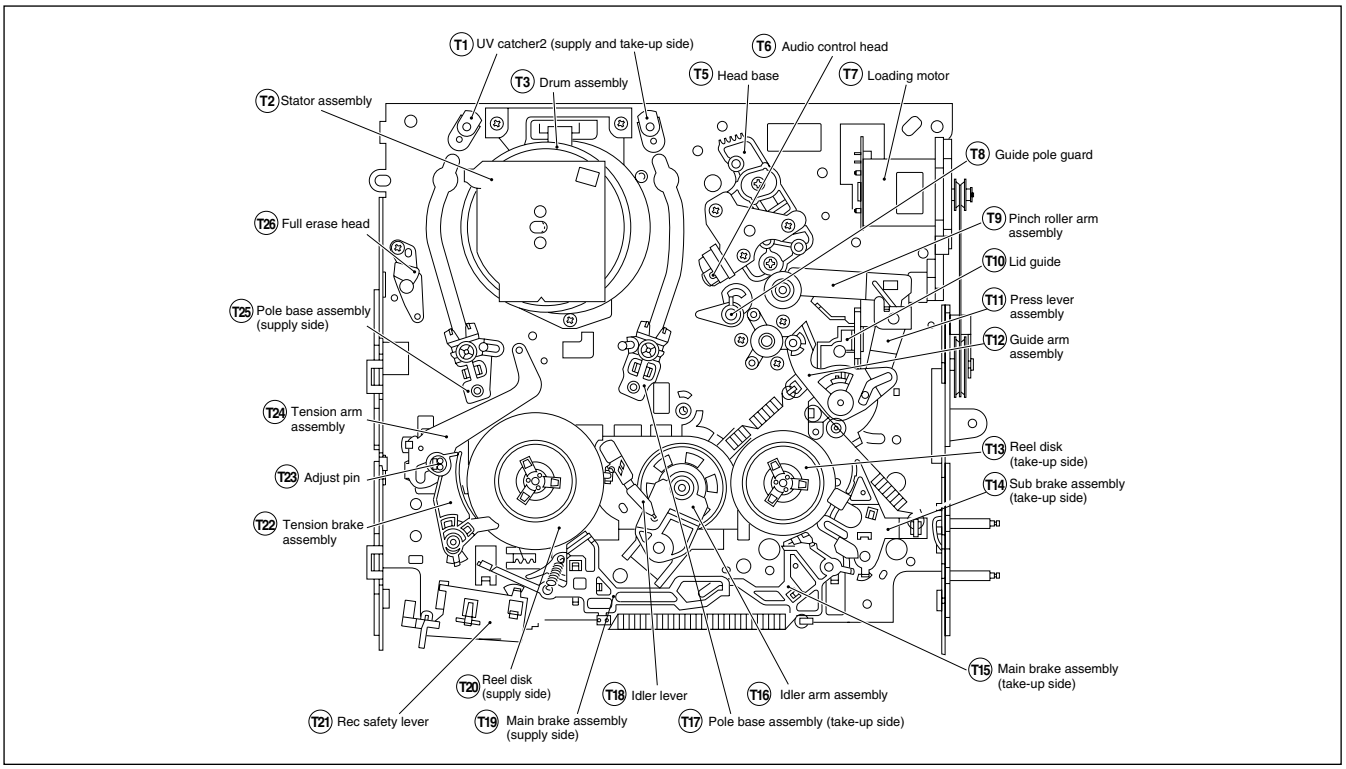

T1 UV catcher2 (supply and take-up side)
T6 Audio control head
T5 Head base
T7 Loading motor
T3 Drum assembly
T2 Stator assembly
T8 Guide pole guard
T26 Full erase head
T9 Pinch roller arm assembly
T10 Lid guide
T25 Pole base assembly (supply side)
T11 Press lever assembly
T12 Guide arm assembly
T24 Tension arm assembly
T13 Reel disk (take-up side)
T23 Adjust pin
T14 Sub brake assembly (take-up side)
T22 Tension brake assembly
T15 Main brake assembly (take-up side)
T20 Reel disk (supply side)
T18 Idler lever
T16 Idler arm assembly
T21 Rec safety lever
T19 Main brake assembly (supply side)
T17 Pole base assembly (take-up side)

Fig. 2-1-5a Mechanism assembly top side

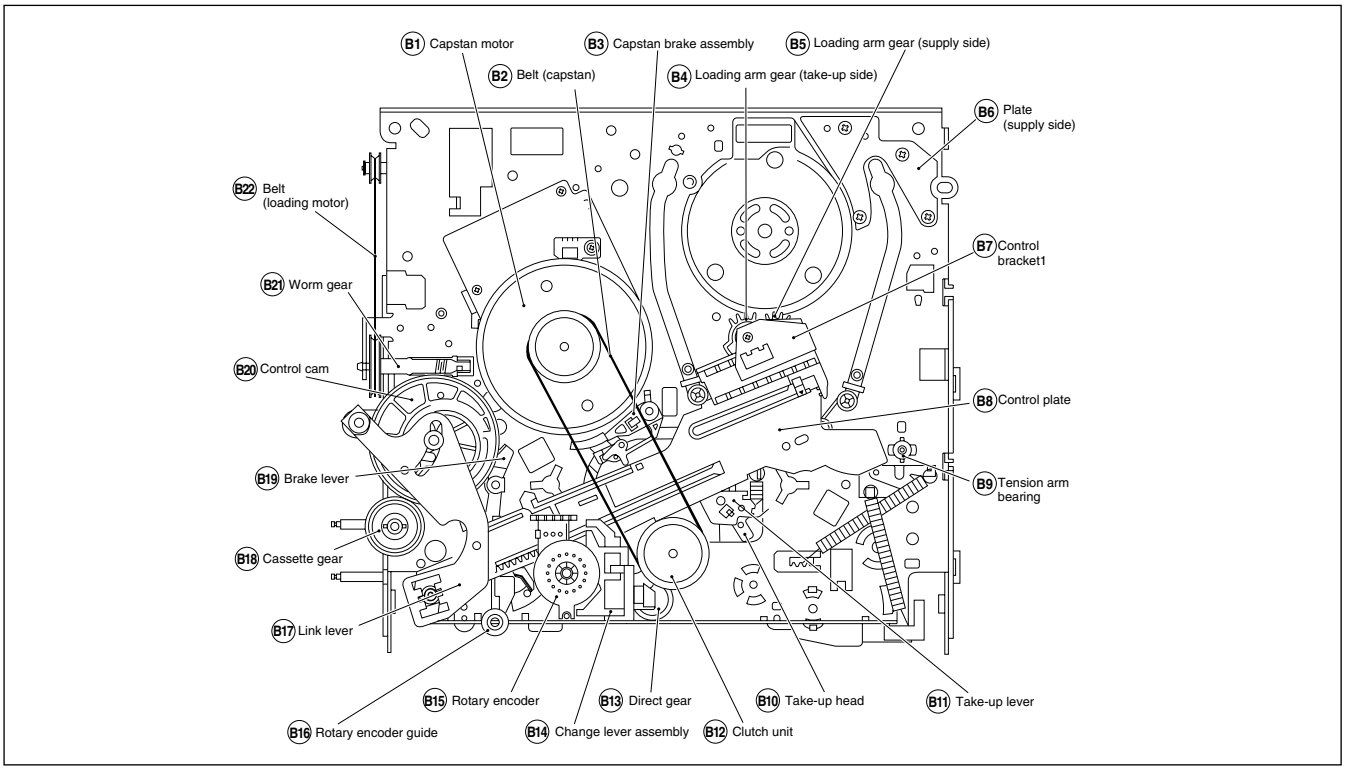


Fig. 2-1-5b Mechanism assembly bottom side

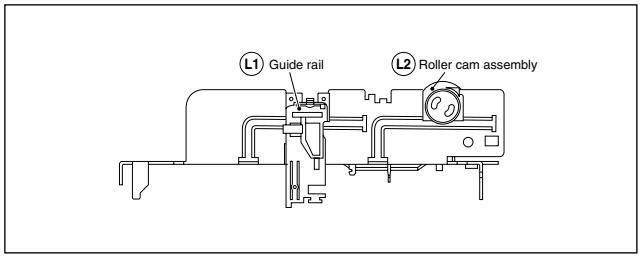


Fig. 2-1-5c Mechanism assembly left side

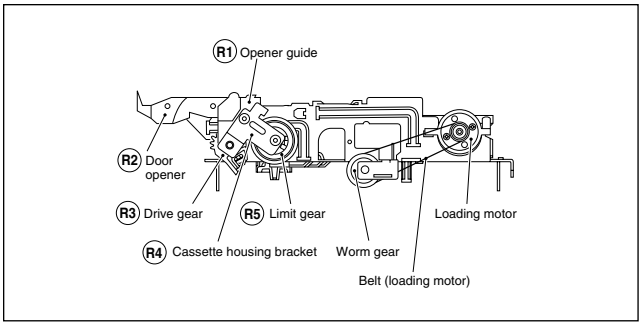


Fig. 2-1-5d Mechanism assembly right side

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note:

- ***Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.***

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

Note:

- ***See the "mechanism assembly" diagram of the parts list for the lubricating or greasing spots, and for the types of oil or grease to be used.***

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning,lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions.However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time,even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake assembly		○
	Main brake assembly		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear		○
	Control plate		○
Other	Brush	★○	★○
	Tension brake assembly	○	○
	Rotary encoder		○

★ : Cleaning

○ : Inspection or Replacement if necessary

Table 2-1-5a

5. Disassembling procedure table

The following table indicates the order in which parts are removed for replacement. To replace parts, remove them in the order of 1 to 18 as shown in the table. To install them, reverse the removal sequence.

The symbols and numbers preceding the individual part names represent the numbers in the "Location of major mechanical parts" table. Also, the "T", "B", and "T/B" on the right of each part name shows that the particular part is removed from the front, from the back, and from both sides of the mechanism, respectively.

Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front (T)/Back (B) of mechanism	Number of removal steps	L1 Guide rail	L2 Roller cam assembly	R4 Cassette housing bracket	R1 Opener guide	— Relay gear	— Cassette holder assembly	R3 Drive gear	— Drive arm	T9 Pinch roller arm assembly	T12 Guide arm assembly	T11 Press lever assembly	T1 UV catcher2	B15 Rotary encoder	B12 Clutch unit	B14 Change lever assembly	B13 Direct gear	— Clutch gear	B17 Link lever	B21 Worm gear	B7 Control bracket1	B8 Control plate	B5 Loading arm gear (supply side)	B4 Loading arm gear (take-up side)	B11 Take-up lever	T14 Sub brake assembly (take-up side)	T15 Main brake assembly (take-up side)	T13 Reel disk (take-up side)	T22 Tension brake assembly	T24 Tension arm assembly	T18 Idler lever	B19 Brake lever (*1)
L1	2.2.3 Guide rail	T	1																															
L2	2.2.3 Roller cam assembly	T	1																															
R4	2.2.3 Cassette housing bracket	T	1																															
R1	2.2.3 Opener guide	T	2			1																												
R2	2.2.3 Door opener	T	3			1	2																											
—	2.2.3 Relay gear	T	3			1	2																											
R5	2.2.3 Limit gear	T	3			1	2																											
—	2.2.3 Cassette holder assembly	T	6	1	2	3	4	5																										
R3	2.2.3 Drive gear	T	4			1	2	3																										
—	2.2.3 Drive arm	T	8	1	2	3	4	5	6	7																								
T9	2.2.4 Pinch roller arm assembly	T	1																															
T12	2.2.5 Guide arm assembly	T	1																															
T11	2.2.5 Press lever assembly	T	3									1	2																					
T6	2.2.6 Audio control head	T	1																															
T7	2.2.7 Loading motor	T	1																															
B1	2.2.8 Capstan motor	T/B	1																															
T1	2.2.9 UV catcher2	T	1																															
T17	2.2.9 Pole base assembly (take-up side)	T/B	2												1																			
T25	2.2.9 Pole base assembly (supply side)	T/B	2												1																			
B15	2.2.10 Rotary encoder	B	1																															
B12	2.2.11 Clutch unit	B	1																															
B14	2.2.12 Change lever assembly	B	3													1	2																	
B13	2.2.12 Direct gear	B	4													1	2	3																
—	2.2.12 Clutch gear	B	5													1	2	3	4															
—	2.2.12 Coupling gear (*2)	B	6													1	2	3	4	5														
B17	2.2.13 Link lever	B	1																															
B18	2.2.14 Cassette gear	B	2																		1													
B20	2.2.14 Control cam	B	2																		1													
B21	2.2.14 Worm gear	B	1																															
T10	- Lid guide	T/B	5									1	2	3								4												
B7	2.2.15 Control bracket1	B	1																															
B8	2.2.15 Control plate	B	6													1	2	3			4		5											
B5	2.2.16 Loading arm gear (supply side)	B	7													1	2	3			4		5	6										
B4	2.2.16 Loading arm gear (take-up side)	B	8													1	2	3			4		5	6	7									
—	2.2.16 Loading arm gear shaft	B	9													1	2	3			4		5	6	7	8								
B11	2.2.17 Take-up lever	T/B	7													1	2	3			4		5	6										
B10	2.2.17 Take-up head	T/B	8													1	2	3			4		5	6			7							
—	2.2.17 Control plate guide	T/B	8													1	2	3			4		5	6			7							
B3	2.2.18 Capstan brake assembly	T/B	7													1	2	3			4		5	6										
T14	2.2.19 Sub brake assembly(take-up side)	T/B	15	1	2	3	4	5	6	7	8					9	10	11			12		13	14										
T15	2.2.20 Main brake assembly(take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T19	2.2.20 Main brake assembly(supply side)	T/B	9	1	2	3	4	5	6	7	8																							
T13	2.2.20 Reel disk (take-up side)	T/B	16	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15						
T22	2.2.21 Tension brake assembly	T/B	9	1	2	3	4	5	6	7	8																							
T20	2.2.21 Reel disk (supply side)	T/B	10	1	2	3	4	5	6	7	8																					9		
T24	2.2.21 Tension arm assembly	T/B	10	1	2	3	4	5	6	7	8																					9		
B9	2.2.21 Tension arm bearing	T/B	10	1	2	3	4	5	6	7	8																					9		
T18	2.2.22 Idler lever	T/B	17	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	
T16	2.2.22 Idler arm assembly	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14								15	16	17
B19	- Brake lever (*1)	T/B	18	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				
B16	- Rotary encoder guide	T/B	19	1	2	3	4	5	6	7	8					9	10	11			12		13	14				15	16	17				18

Table 2-1-5b

Note:

- ***The parts with marked (*) have different types of mechanisms (standard type or high-speed FF/REW type).***
  - **** 1 : Uses the standard type mechanism only.***
  - **** 2 : Uses the high-speed FF/REW type mechanism only.***

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling (Phase matching between mechanical parts)

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.
Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm gear, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.
Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as the drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. (For information on phase matching of the mechanism, see the instructions on how to install individual parts.)
This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures.
This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the mechanism assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY.) Turn the worm gear toward the front so that the guide hole of the control cam is brought into alignment with the hole at the mechanism assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-2a.)

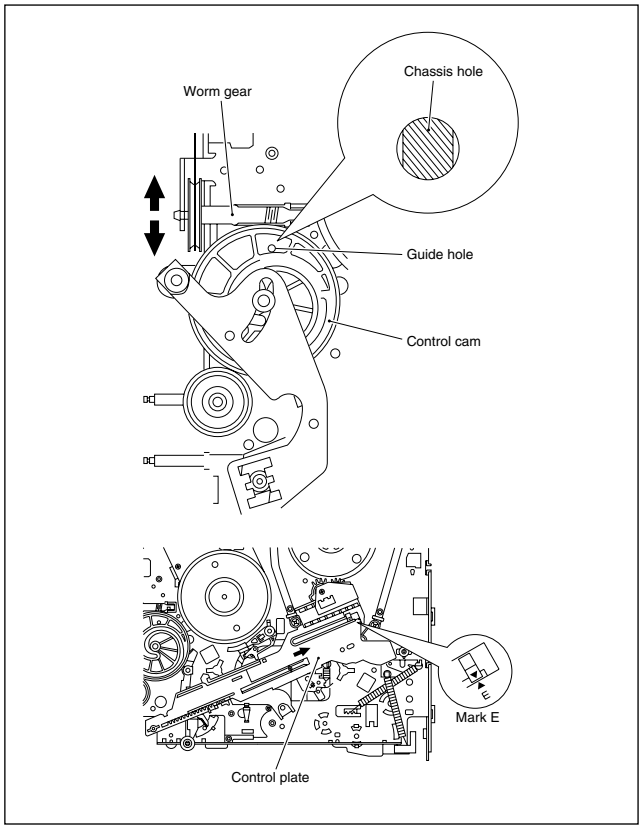


Fig. 2-2-2a

2.2.3 Cassette Holder Assembly

1. How to remove

(1) Remove the guide rail and roller cam assembly. (See Fig.2-2-3a.)
(3 lugs on the guide rail and one lug on the roller cam assembly)

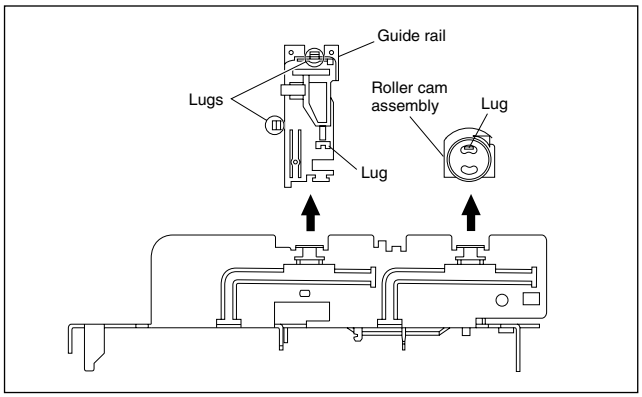


Fig. 2-2-3a

(2) Remove the two slit washers and remove the cassette housing bracket. (See Fig.2-2-3b.)
(3) Remove the opener guide, spring(A), door opener, relay gear and limit gear. (See Fig.2-2-3b.)

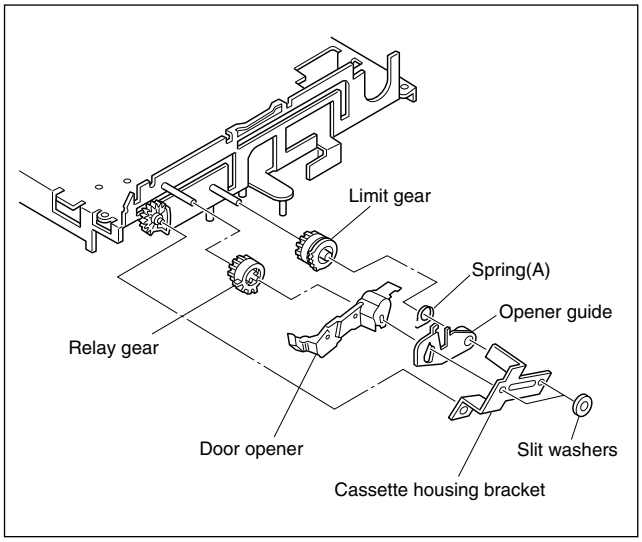


Fig. 2-2-3b

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the roller cam assembly have been removed (so that the drive arm is upright). (See Fig.2-2-3c.)

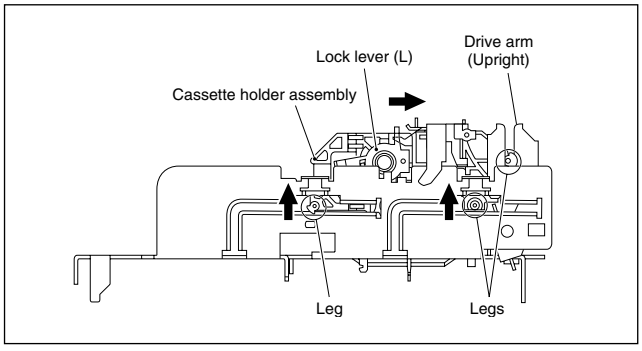


Fig. 2-2-3c

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs Ⓐ and Ⓑ on the right side out of the rail and also pull up the legⒸ. (See Fig.2-2-3d and Fig.2-2-3e.)
(6) Draw out the drive gear, and remove the drive arm.

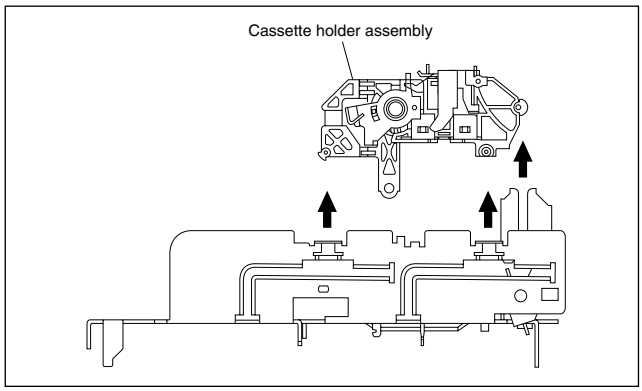


Fig. 2-2-3d

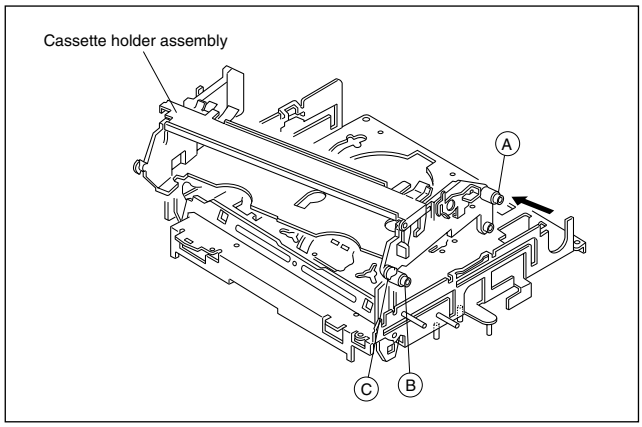


Fig. 2-2-3e

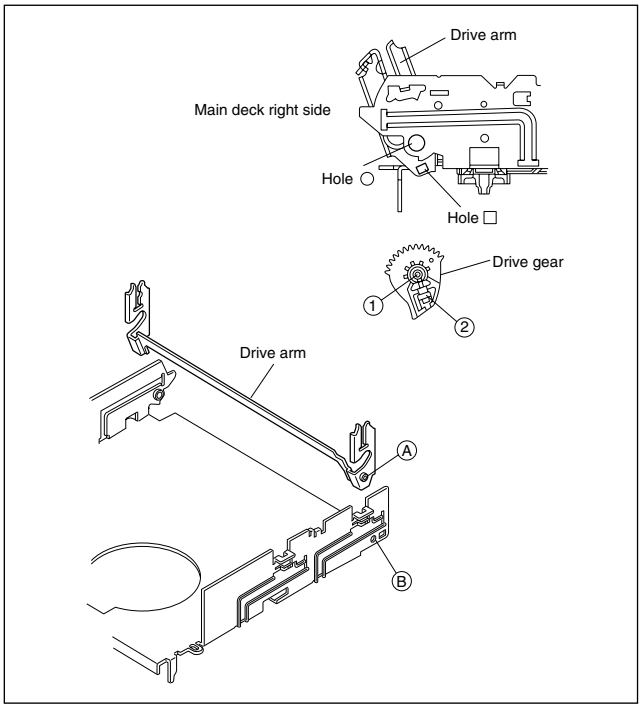


Fig. 2-2-3f

2. How to install (Phase matching)
(1) Insert the section Ⓐ of the drive arm into the section Ⓑ of the main deck.
(2) Insert the section ① of the drive gear into the round hole, and the section ② into the square hole on the drive arm. (See Fig.2-2-3f.)
(3) Hold the drive arm upright and fit the leg Ⓒ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-3g.)
(4) While swinging the lock lever (R) of the cassette holder assembly toward the front, put the legs Ⓐ and Ⓑ into the rail. (See Fig.2-2-3g.)
(5) Drop the three legs on the left side of the cassette holder assembly into the groove at one time. (See Fig.2-2-3h.)
(6) Slide the whole cassette holder assembly toward the front to bring it to the eject end position.
(7) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the guide hole on the main deck. (See Fig.2-2-3i.)
(8) Install so that the notch on the periphery of the relay gear is aligned with the notch of the main deck and that hole A of the relay gear is aligned with the hole A of the limit gear and that hole B of the relay gear is aligned with the hole B of the drive gear. (See Fig.2-2-3i.)
(9) Install the door opener, opener guide, spring(A) and cassette housing bracket and fasten the two slit washers.

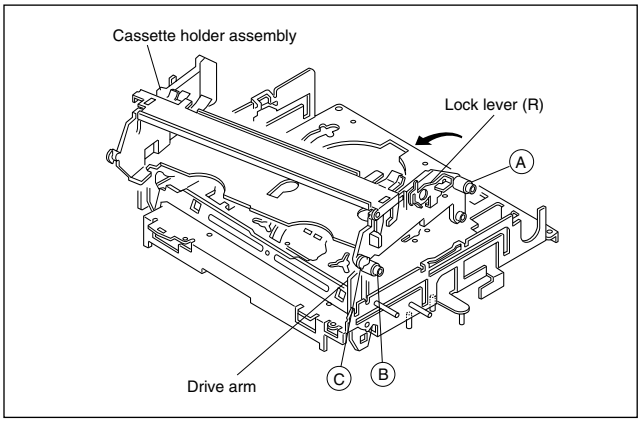


Fig. 2-2-3g

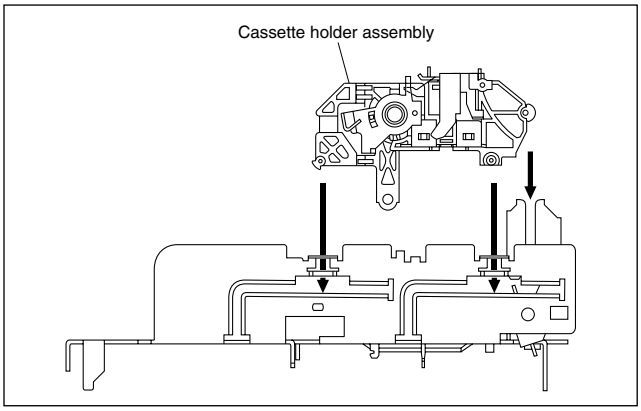


Fig. 2-2-3h

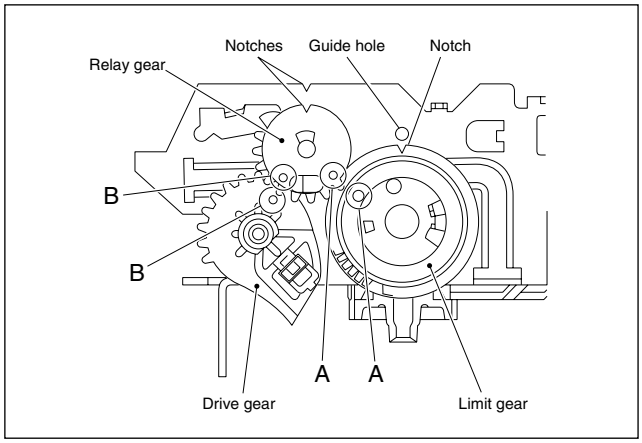


Fig. 2-2-3i

2.2.4 Pinch Roller Arm Assembly

1. How to remove

(1) Remove the spring from the hook of the press lever assembly.
(2) Remove the slit washer and remove the pinch roller seat 2. (See Fig.2-2-4a.)
(3) Remove the pinch roller arm assembly by pulling it up.

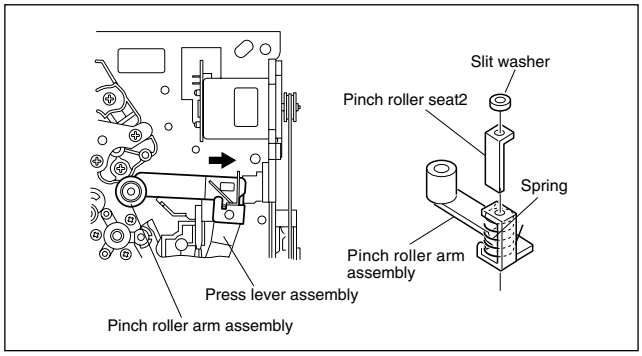


Fig. 2-2-4a

2.2.5 Guide Arm Assembly and Press Lever Assembly

1. How to remove

(1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm assembly by pulling it up.
(2) Remove the press lever assembly by pulling it up. (See Fig.2-2-5a.)

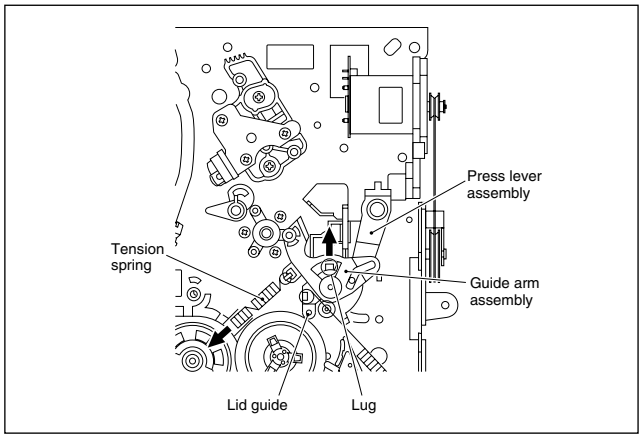


Fig. 2-2-5a

2.2.6 Audio Control Head

1. How to remove

(1) Remove the two screws (A) and remove the audio control head together with the head base.
(2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

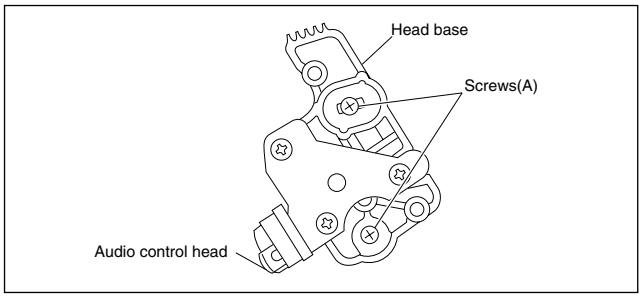


Fig. 2-2-6a

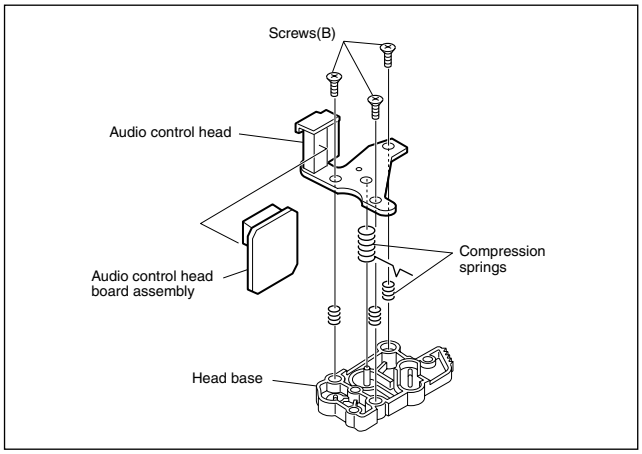


Fig. 2-2-6b

2. How to install

(1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-6c. Also make sure that the screw center (centre) is brought into alignment with the center (centre) position of the slot.

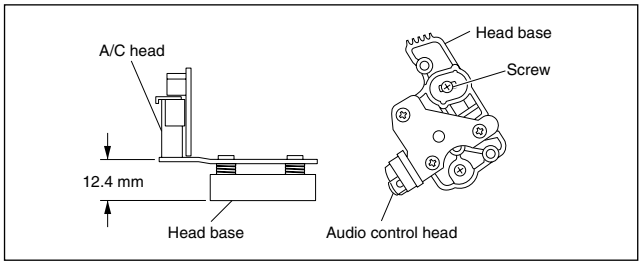


Fig. 2-2-6c

2.2.7 Loading Motor

1. How to remove

(1) Remove the belt wound around the worm gear.
(2) Open the two lugs of the motor guide and remove the loading motor, loading motor board assembly and motor guide altogether by pulling them up.
(3) When replacing the loading motor board assembly, take care with the orientation of the loading motor. (Install so that the loading motor label faces upward.)
(4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-7a.

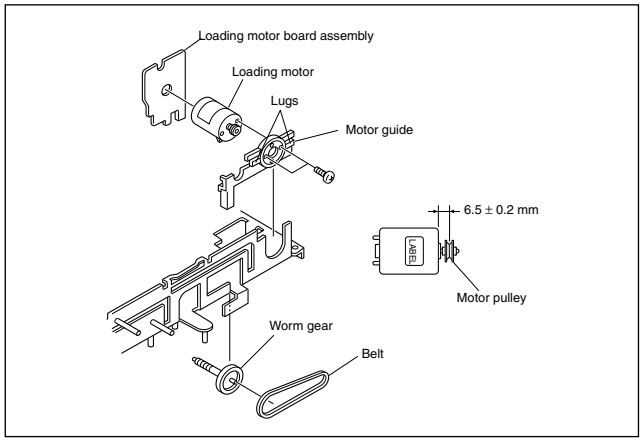


Fig. 2-2-7a

2.2.8 Capstan Motor

1. How to remove

(1) Remove the belt (capstan) on the mechanism assembly back side.
(2) Remove the three screws (A) and remove the capstan motor.

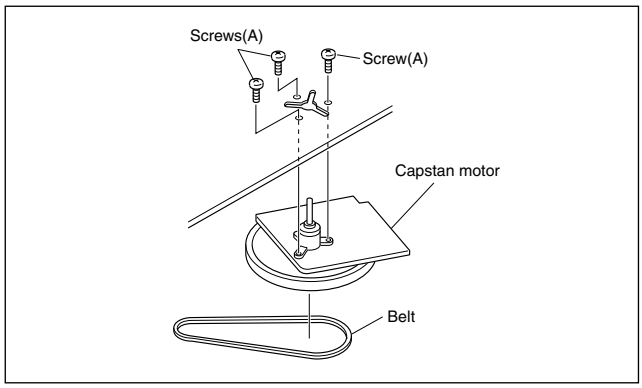


Fig. 2-2-8a

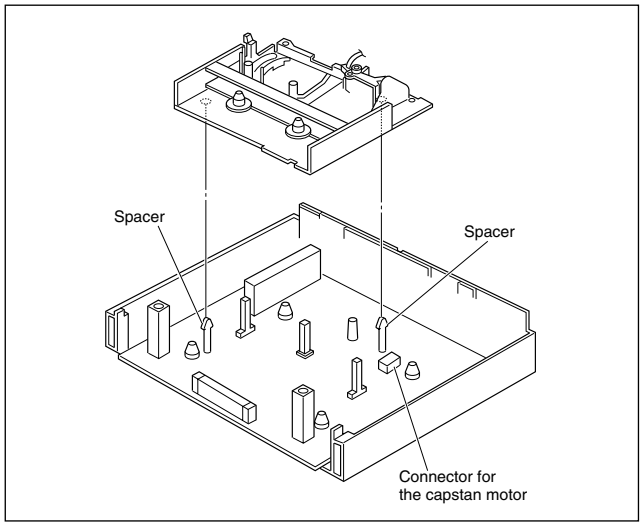


Fig. 2-2-8b

2. How to install (Centering the mounting position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

(1) Provisionally tighten the three screws (A) securing the capstan motor.
(2) Install the mechanism assembly to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism.)
Make sure that all the connectors for the mechanism assembly and the Main board assembly are correctly installed as indicated in Fig. 2-2-8b.
(3) Making sure that the connector for the capstan motor is correctly mounted, and securely tighten the three screws (A).

Note:

- ***When the capstan motor has been replaced with a new one, perform recording in the EP(or LP) mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).***

2.2.9 Pole Base Assembly (supply or take-up side)

1. How to remove

(1) Remove the UV catcher 2 on the removal side by loosening the screw (A).
(2) Remove the pole base assembly on the supply side from the mechanism assembly by loosening the screw (B) on the mechanism assembly back side and sliding the pole base assembly toward the UV catcher 2.
(3) As for the pole base assembly on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate. (See the “Procedures for Lowering the Cassette holder assembly” of 1.3 DISASSEMBLY/ASSEMBLY METHOD.) Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing the screw (B).

Note:

- ***After reinstalling the Pole base assembly and the UV catcher2, be sure to perform compatibility adjustment.***

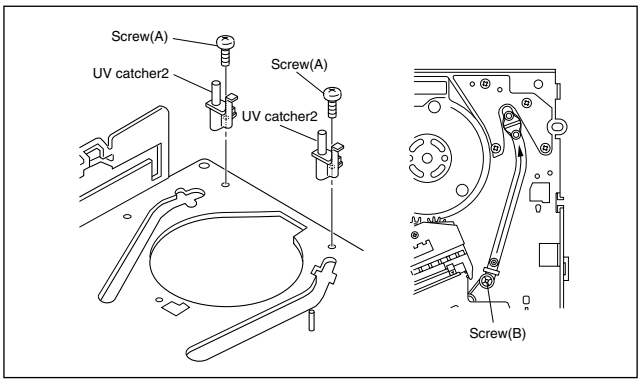


Fig. 2-2-9a

2.2.10 Rotary Encoder

1. How to remove

(1) Remove the screw (A) and remove the rotary encoder by pulling it up. (See Fig. 2-2-10a.)

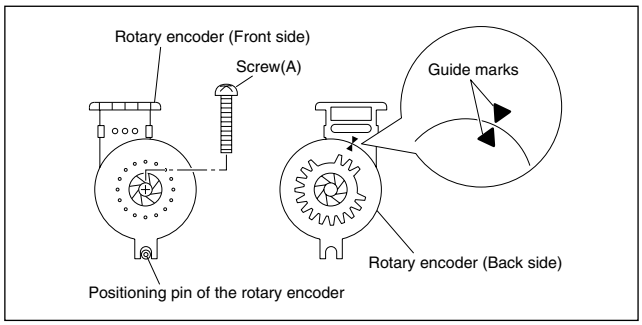


Fig. 2-2-10a

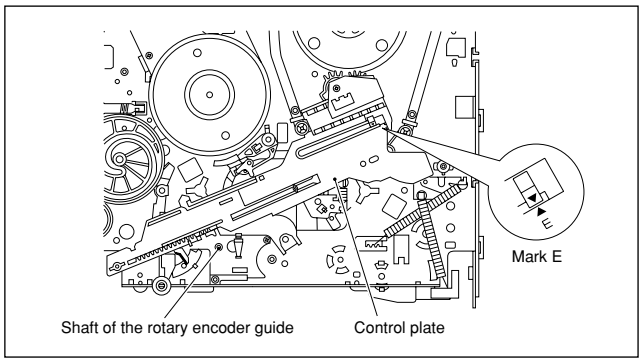


Fig. 2-2-10b

2. How to install (Phase matching)

(1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the guide marks on the rotary encoder into alignment as indicated in Fig.2-2-10a. (See Fig. 2-2-10a and Fig. 2-2-10b.)

(2) Turn over the rotary encoder with its guide marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.

(3) Tighten the screw (A) to complete the installation.

2.2.11 Clutch Unit

(1) Remove the belt wound around the capstan motor and the clutch unit.

(2) Remove the slit washer and remove the clutch unit.

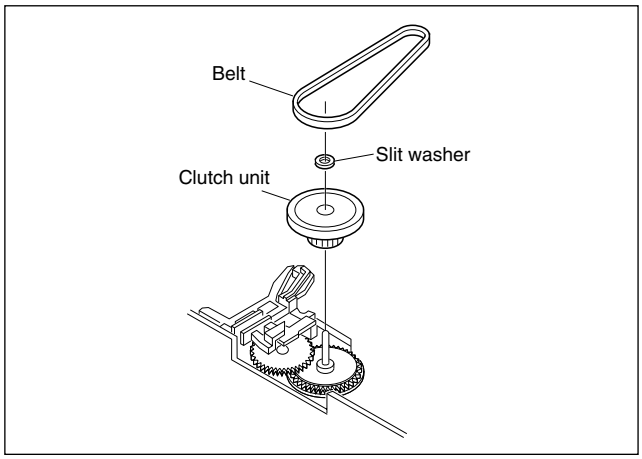


Fig. 2-2-11a

2.2.12 Change Lever Assembly, Direct Gear, Clutch Gear and Coupling Gear

1. How to remove

(1) Release the two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever assembly.

(2) Remove the slit washer retaining the direct gear and remove the latter.
Take care so as not to lose the washer and spring. (See Fig.2-2-12a.)

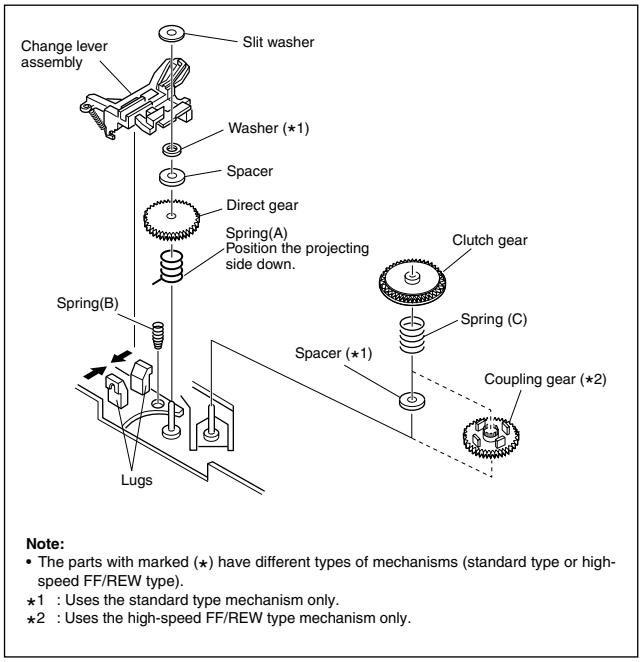


Fig. 2-2-12a

2. How to install

(1) Install the clutch gear, spring (A), spring (C), direct gear, spacer and others to the individual shafts of the main deck, and finally the slit washer. (See Fig.2-2-12a.)

(2) Let the spring (B) drops into the rotary encoder guide hole and install the change lever assembly.(Take care not to mistake a direction of the spring.) The point is to slightly lift the clutch gear and catch it from the both sides with the assembly. (See Fig.2-2-12b.)

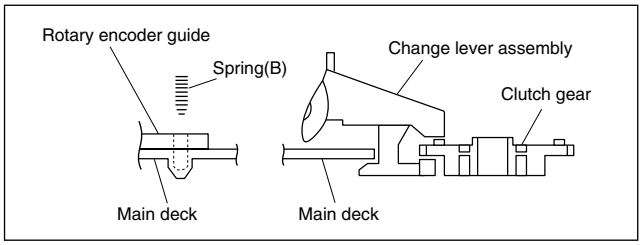


Fig. 2-2-12b

2.2.13 Link Lever

1. How to remove

(1) Remove the two slit washers.
(2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the locking section of the control plate.

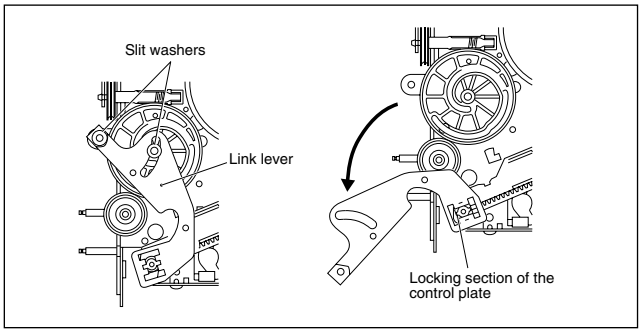


Fig. 2-2-13a

2. How to install (Phase matching)

(1) Slide the control plate so that its mark E is aligned with the mark ▼ on the loading arm gear shaft. (See Fig.2-2-13b.)
(2) Rotate the worm gear until the guide hole of the control cam is aligned exactly with the guide hole of the main deck. (See Fig.2-2-13c.)
(3) Insert the link lever into the locking section of the control plate. (See Fig.2-2-13a.)
(4) Rotate the link lever clockwise so that it is installed on the shafts in the center (centre) and on the left of the control cam.
(5) Fasten the slit washers at these two points.

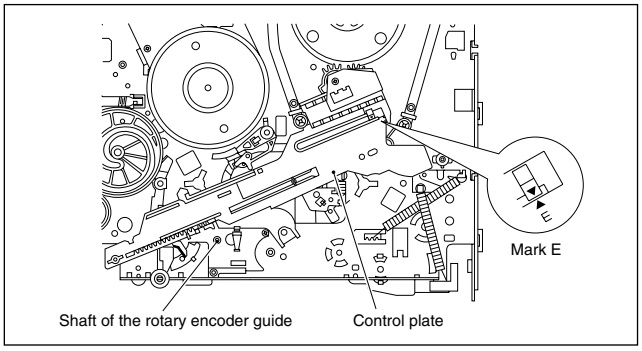


Fig. 2-2-13b

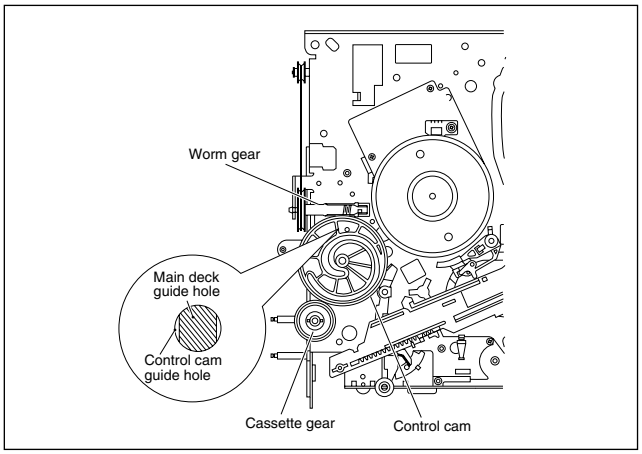


Fig. 2-2-13c

2.2.14 Cassette Gear, Control Cam and Worm Gear

1. How to remove

(1) Remove the control cam by lifting it.
(2) Open the two lugs of the cassette gear outward and pull the latter off.
(3) Remove the belt wound around the worm gear and the loading motor.
(4) Open the lug of the lid guide outward and remove the worm gear.

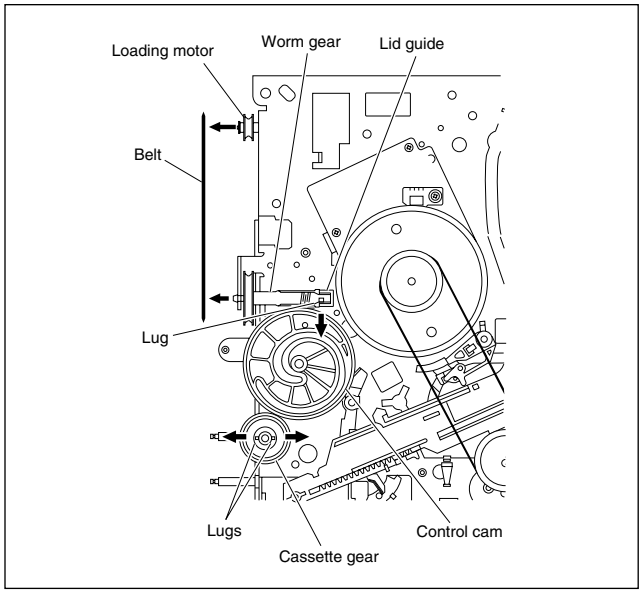


Fig. 2-2-14a

2.2.15 Control Plate

1. How to remove

(1) Remove the screw (A) retaining the control bracket 1 and remove the latter.
(2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-15a.)

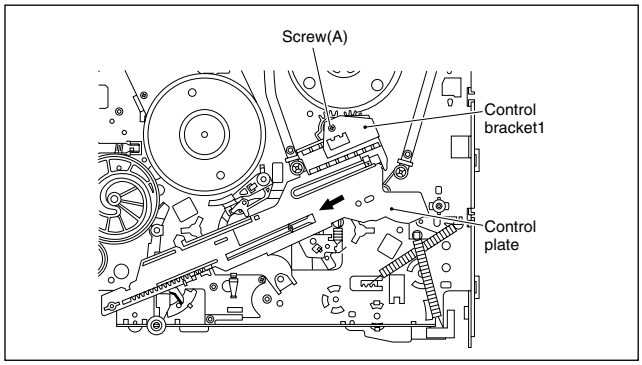


Fig. 2-2-15a

2. How to install (Phase matching)

(1) Adjust the position of the idler arm assembly pin as indicated in Fig.2-2-15b (to the left of center (centre) of the R section).
(2) Bring the guide hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.

(3) Install the control plate so that the section A of the loading arm gear shaft fits into the hole (A) of the control plate, the section B of the control plate guide into the hole (B), and the control plate comes under the section C of the rotary encoder guide and the section D of the loading arm gear shaft while press-fit the pole base assmebly (supply side) as indicated by the arrow. It is important that the tension arm assembly shaft is positioned closer toward you than the control plate. (See Fig.2-2-15c.)
(4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-15c.)
(5) Pull off the hexagonal wrench for positioning.

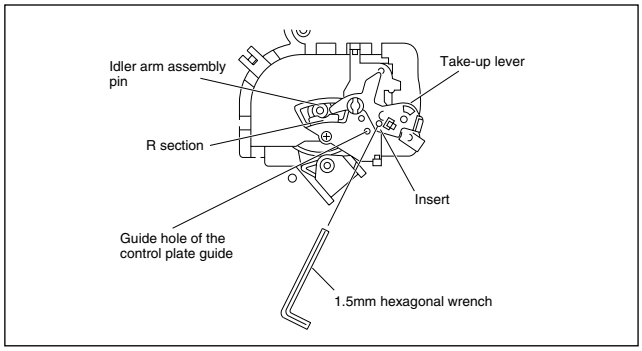


Fig. 2-2-15b

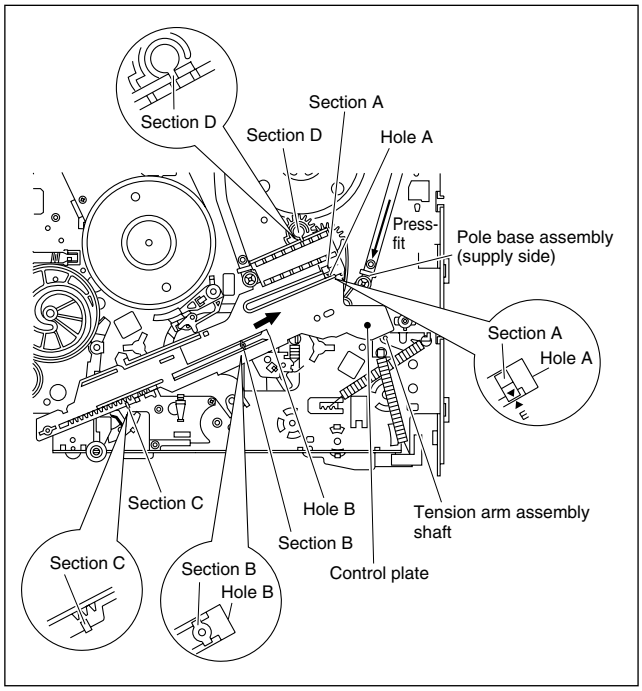


Fig. 2-2-15c

2.2.16 Loading Arm Gear (supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

(1) Remove the loading arm gear (supply side) by loosening the screw (A). (See Fig. 2-2-16a.)
(2) Remove the screw (B) and remove the torsion arm from the pole base assembly (take-up side). (See Fig.2-2-16a.)
(3) Turn the loading arm gear (take-up side) clockwise so that the notch of the loading arm gear (take-up side) is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise so that the notch is in alignment with the projection and remove the loading arm gear (take-up side). (See Fig.2-2-16a and Fig. 2-2-16b.)
(4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove the screw (C) and remove the loading arm gear shaft by sliding it.

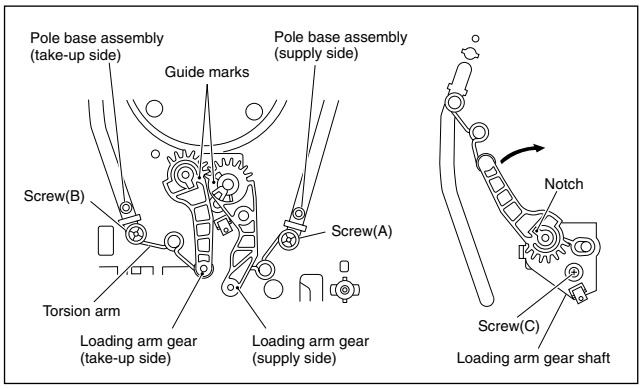


Fig. 2-2-16a

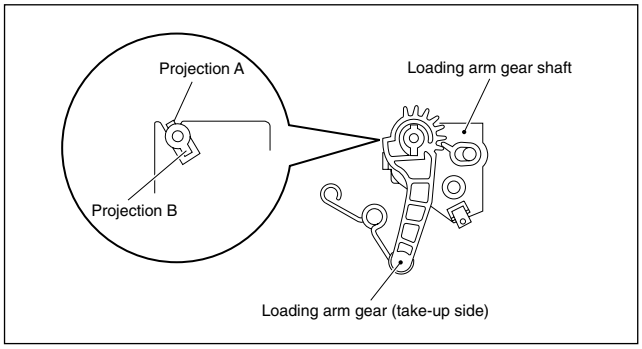


Fig. 2-2-16b

2. How to install

(1) Align the notch of the loading arm gear (take-up side) to the projection B of the loading arm gear shaft and slip it over. Then rotate it clockwise for alignment with the projection A and slip it down to the bottom. (See Fig.2-2-16b.)
(2) Then turn the loading arm gear (take-up side) counterclockwise. Hang the torsion arm on the pole base assembly (take-up side) and tighten the screw (B).
(3) Install the loading arm gear (supply side) so that the guide mark of the loading arm gear (take-up side) is in alignment with the guide mark of the loading arm gear (supply side). Then hang the torsion arm on the pole base assembly (supply side) and tighten the screw (A). (See Fig.2-2-16a.)

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

(1) Remove the spring of the take-up lever from the main deck.
(2) Remove the lug (A) of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
(3) Remove the screw (A).
(4) Align the idler arm assembly pin in the center (centre) of the R section of the control plate guide, remove the control plate guide lugs (B) and (C) from the main deck, and remove the control plate guide.

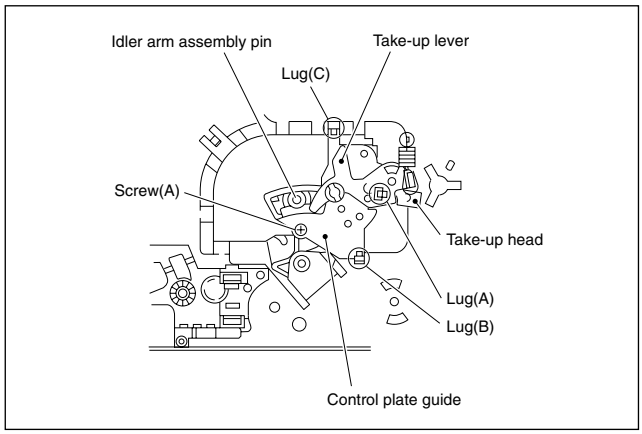


Fig. 2-2-17a

2.2.18 Capstan Brake Assembly

1. How to remove

(1) Move the lug (A) of the capstan brake assembly in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-18a.)
(2) Remove the lug (B) of the capstan brake assembly from the main deck and remove the capstan brake assembly.

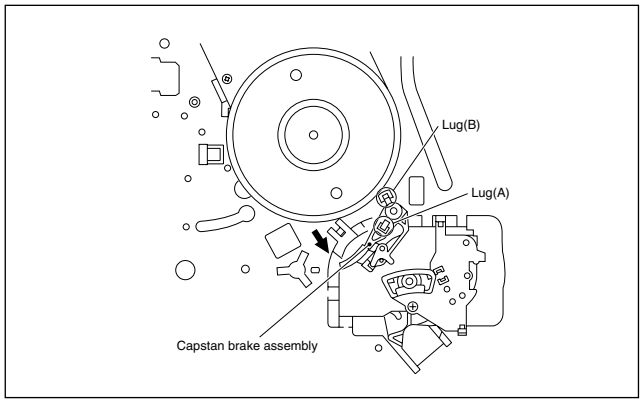


Fig. 2-2-18a

2.2.19 Sub Brake Assembly (take-up side)

1. How to remove

(1) Remove the spring attached to the lid guide and sub brake assembly (take-up side).
(2) Bring the lug (A) of the sub brake assembly (take-up side) into alignment with the notch of the main deck.
(3) Remove the lugs (B) and (C) of the sub brake assembly (take-up side) from the main deck and remove the sub brake assembly (take-up side).

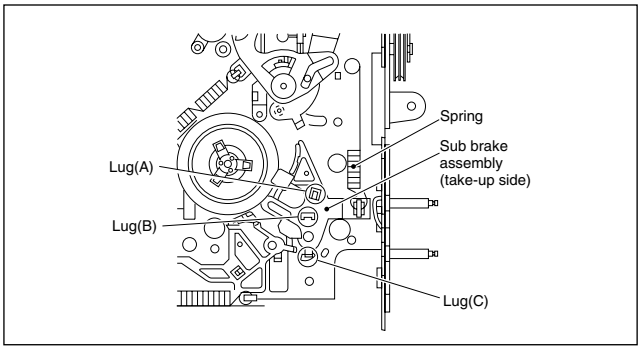


Fig. 2-2-19a

2.2.20 Main Brake Assembly (take-up side), Reel Disk (take-up side) and Main Brake Assembly (supply side)

1. How to remove

(1) Move the main brake assembly (take-up side) in the arrow-indicated direction and remove the reel disk (take-up side).
(2) Remove the spring attached to the main brake assembly.
(3) Remove the lug (A) of the main brake assembly (take-up side) and pull out the lug (B) after bringing it into alignment with the main deck notch.
(4) Remove the lugs (C), (D) and (E) of the main brake assembly (supply side) from the main deck and pull them off. (See Fig.2-2-20a.)
(5) When installing the main brake assembly (take-up side), slide the brake lever in the direction as indicated by the arrow to prevent it from hitting the projection of the main brake assembly (take-up side). (See Fig.2-2-20b.)

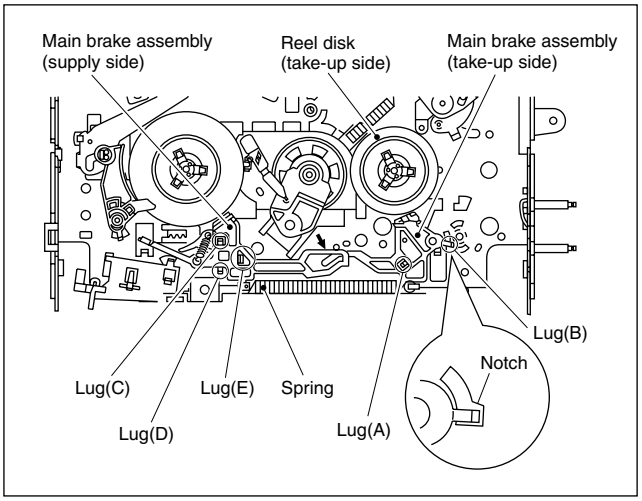
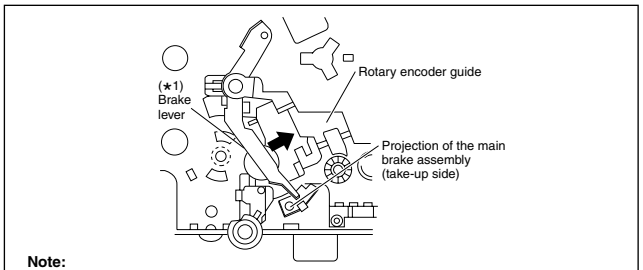


Fig. 2-2-20a



Note:
• The parts with marked (∗) have different types of mechanisms (standard type or high-speed FF/REW type).
∗1 : Uses the standard type mechanism only.

Fig. 2-2-20b

2.2.21 Tension Brake Assembly, Reel Disk (supply side) and Tension Arm Assembly

1. How to remove

(1) Remove the three lugs of the tension brake assembly from the main deck and pull them off.
(2) Remove the reel disk (supply side) by loosening in the arrow-indicated direction the main brake assembly (supply side).
(3) Remove the tension spring on the back of the main deck. Then release the lug of the tension arm bearing in the arrow-indicated direction and draw out the tension arm assembly. (See Fig. 2-2-21a.)

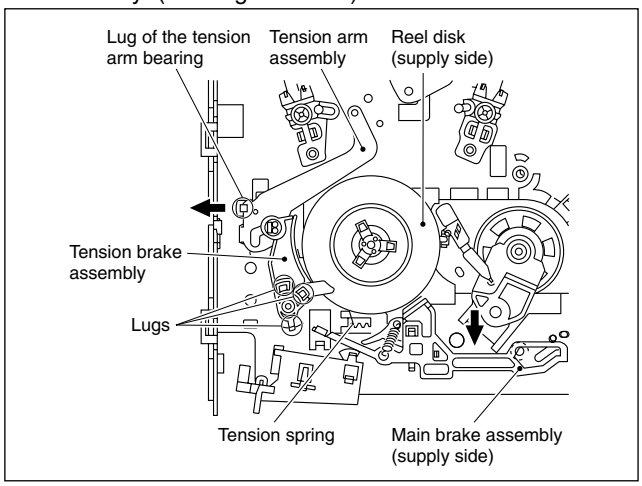


Fig. 2-2-21a

2.2.22 Idler Lever, Idler Arm Assembly

1. How to remove

(1) Remove the lug of the idler lever from the main deck and remove the hook fitted in the idler arm assembly hole by lifting it.
(2) Remove the slit washer and pull out the idler arm assembly.

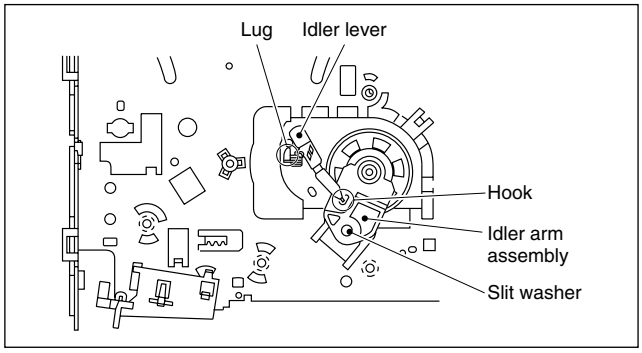


Fig. 2-2-22a

2.2.23 Stator Assembly

(1) Remove the flat cable.
(2) Remove the two screws (A).
(3) Remove the stator assembly by lifting in the arrow-indicated direction. (Take care that the brush spring does not jump out.)
(4) After installation, be sure to perform the PB switching point adjustment according to the electrical adjustment procedure.

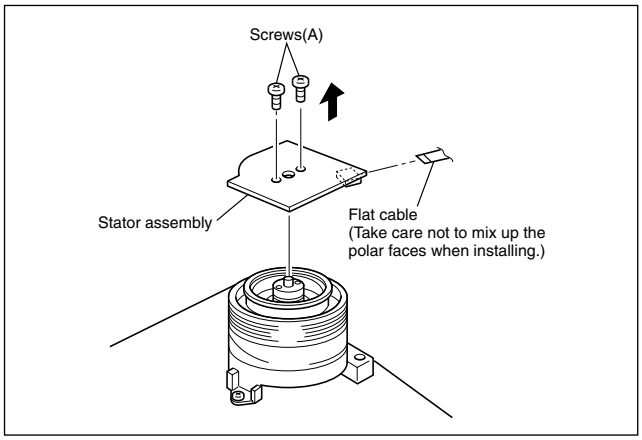


Fig. 2-2-23a

2.2.24 Rotor Assembly

(1) Remove the stator assembly.
(2) Remove the two screws (B) and remove the rotor assembly.

Note:

- ***When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.***

(3) Match the phases of the upper drum assembly and the rotor assembly as indicated in Fig.2-2-24a.
(4) Place the upper drum assembly hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-24a.)

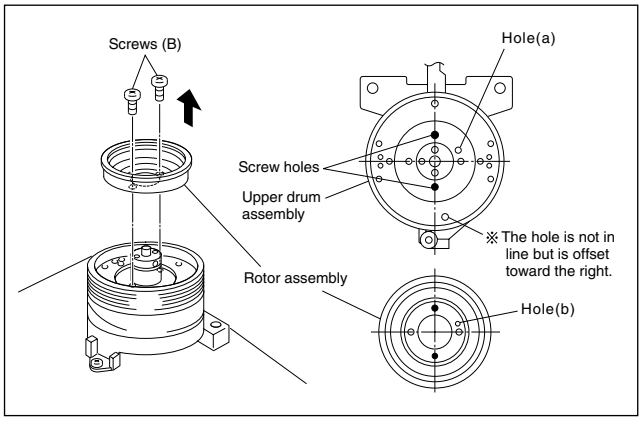


Fig. 2-2-24a

2.2.25 Upper Drum Assembly

1. How to remove

(1) Remove the stator assembly and rotor assembly.
(2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
(3) Remove the upper drum assembly and remove the washer using tweezers.

Note:

- ***When replacement is required, control the up- down movement of the brush. Never apply grease.***

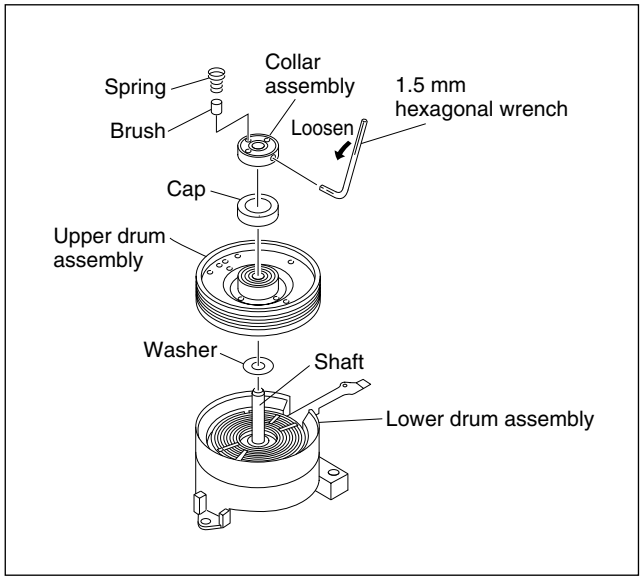


Fig. 2-2-25a

2. How to install

(1) Clean the coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-25b.)
(2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-25a.)

Note:

- ***When replacing the upper drum assembly, replace it the together with the washer.***

(3) Install the cap to the upper drum assembly.
(4) Position the collar assembly as indicated in Fig.2-2-25c while controlling its up- down movement.
(5) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.
(6) After installation, gently turn the upper drum assembly with your hand to make sure that it turns normally. Then install the brush and the spring.
(7) Install the rotor assembly and stator assembly according to Fig 2-2-23a and 2-2-24a.
(8) When installation is complete, clean the upper drum assembly and lower drum assembly and carry out the following adjustments.
    - PB switching point adjustment
    - Slow tracking adjustment
    - Compatibility adjustment (Be sure to check for compatibility for the EP (or LP) mode.)

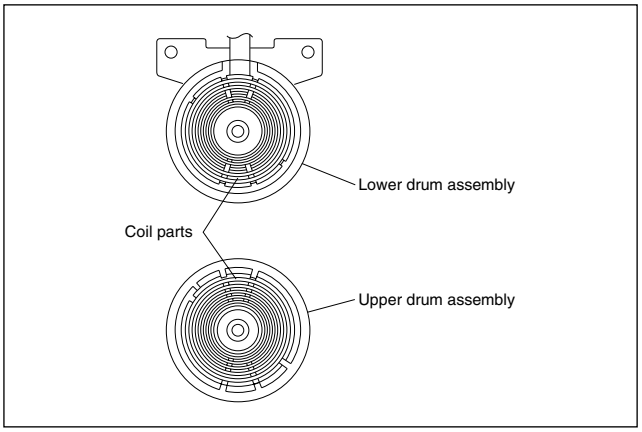


Fig. 2-2-25b

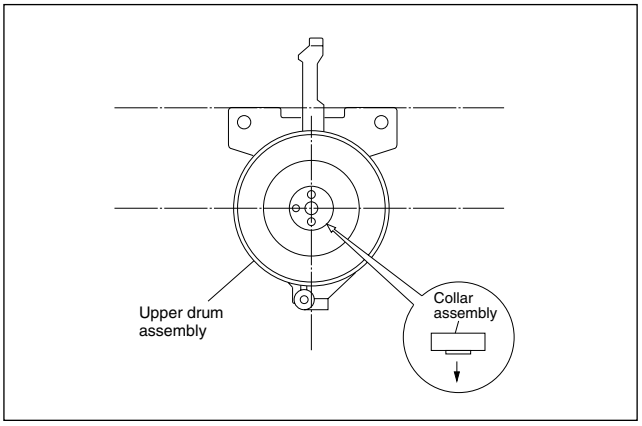


Fig. 2-2-25c

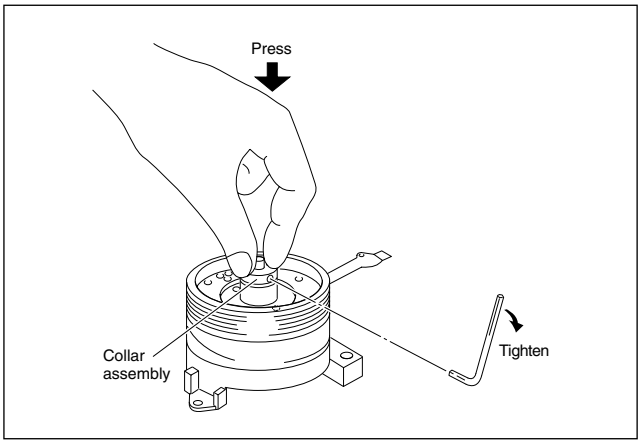


Fig. 2-2-25d

2.3 COMPATIBILITY ADJUSTMENT

Notes:

- ***Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.***
- ***To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.***
- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

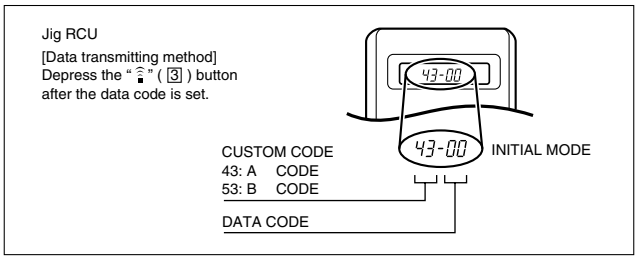


Fig. 2-3a Jig RCU [PTU94023B]

2.3.1 Checking/Adjustment of FM Waveform Linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHPE] • Alignment tape(LP, stairstep, PAL) [MHPE-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 2-3-1a.)
(5) Reduce the V.PB FM waveform while pressing the channel buttons (+, –) during playback. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 2-3-1c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 2-3-1d.)

[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

(9) Repeat steps (1) to (8) by using the alignment tape (A2).

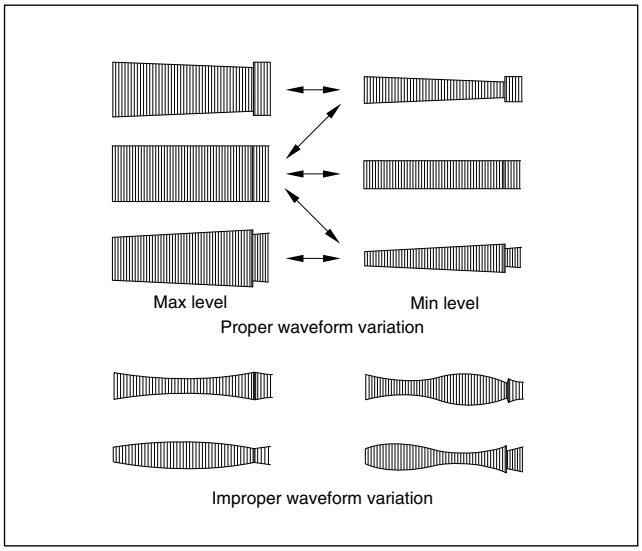


Fig. 2-3-1a

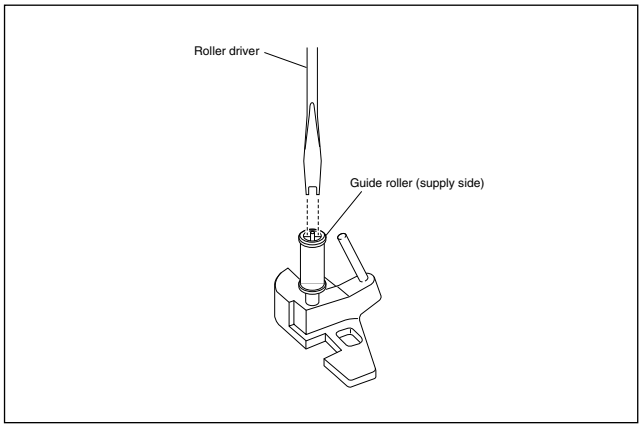


Fig. 2-3-1b

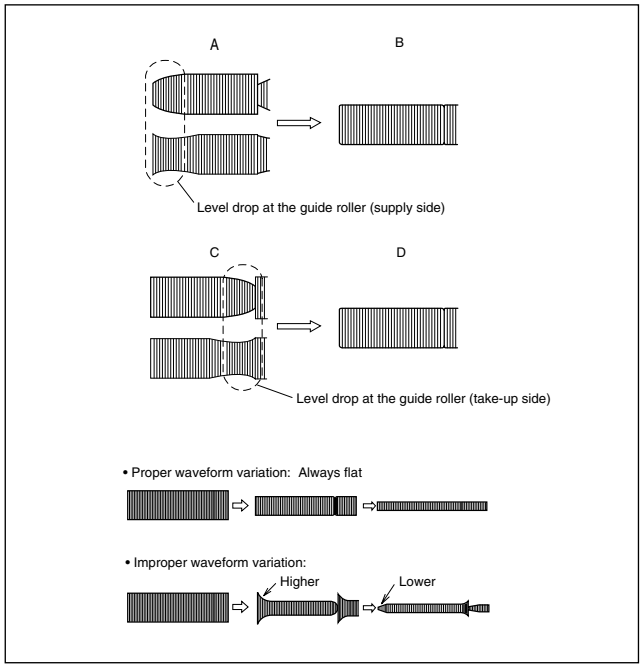


Fig. 2-3-1c

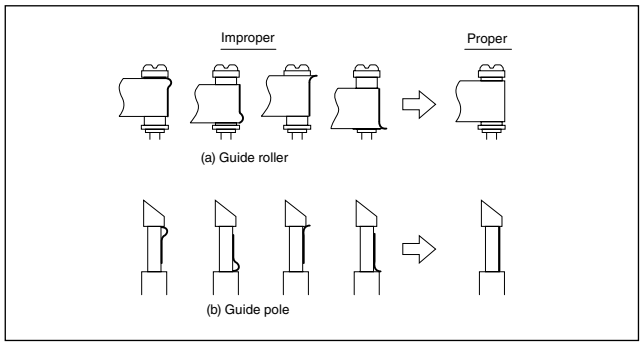


Fig. 2-3-1d

2.3.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note:

- ***Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (See Fig.2-2-6c.)***

Signal	(A)	• Alignment tape(SP, stairstep, PAL) [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• AUDIO OUT terminal • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

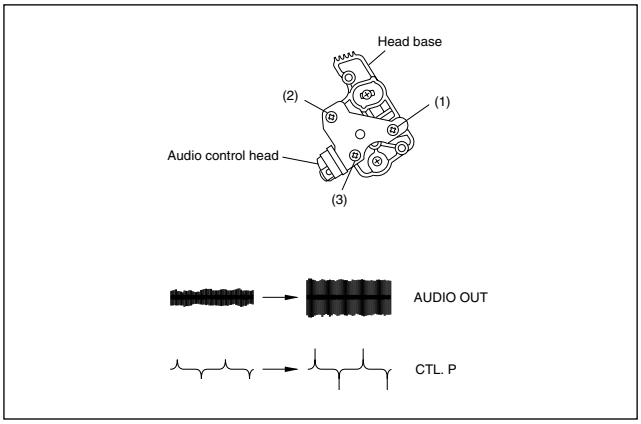


Fig. 2-3-2a

2.3.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHPE] • Alignment tape(LP, stairstep, PAL) [MHPE-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Maximum V.PB FM waveform
Adjustment tool	(H)	• A/C head positioning tool [PTU94010]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Loosen the screws (4) and (5), then set the A/C head positioning tool to the innermost projected part of the A/C head. (See Fig. 2-3-3a.)
(5) Turn the A/C head positioning tool fully toward the capstan. Then turn it back gradually toward the drum and stop on the second peak point position of the V.PB FM waveform output level. Then tighten the screws (4) and (5).
(6) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

[Perform adjustment steps (7) to (10) only for 2 Head models equipped with LP mode.]

(7) Then play back the alignment tape (A2).
(8) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(9) Perform the tracking operation and make sure that the V.PB FM waveform is at its maximum.
(10) If it is not at maximum, loosen the screws (4) and (5), and turn the A/C head positioning tool to bring the A/C head to a position, around where the waveform reaches its maximum for the first time. Then tighten the screws (4) and (5).

Note:

- ***After adjusting, always perform the confirmation and re-adjustment of the item 2.3.4.***

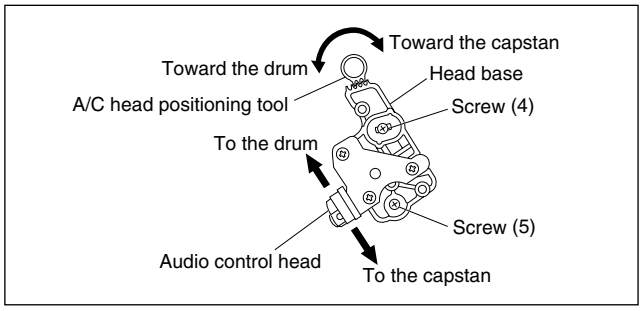


Fig. 2-3-3a

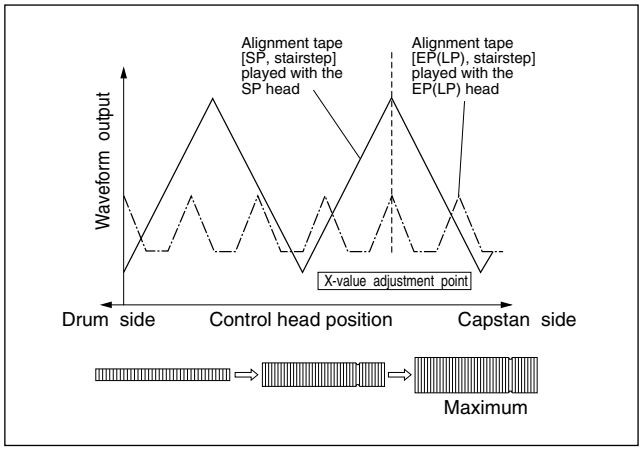


Fig. 2-3-3b

2.3.4 Checking/Adjustment of the Standard Tracking Preset

[This adjustment should not be performed with 2 Head models.]

Signal	(A)	• Alignment tape(LP, stairstep, PAL) [MHPE-L]
Mode	(B)	• PB → Auto adjust
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code “50”
Specified value	(G)	• STOP mode (Maximum V.PB FM waveform)
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Confirm that the automatic tracking operation is completed.
(4) Set the VCR to the Auto adjust mode by transmitting the code (F) twice from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(5) If the VCR enters the eject mode, perform adjustment for the audio control head phase (X-value) again.

2.3.5 Checking/Adjustment of the Tension Pole Position

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B)	• PB
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf•cm (2.45 – 5 × 10^{-3} Nm]

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.
  1) Set the VCR to the mechanism service mode. (See 1.5 MECHANISM SERVICE MODE.)
  2) Set the VCR to the play back mode and adjust by turning adjustment pin to align the tension arm assembly edge with the main deck hole (A) on the right edge marker. (See Fig. 2-3-5a)

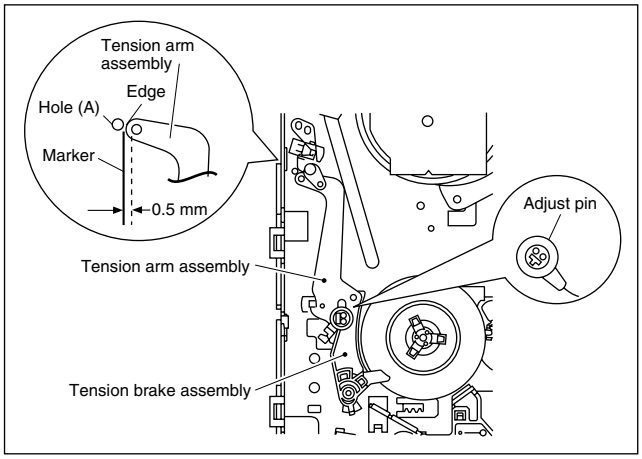
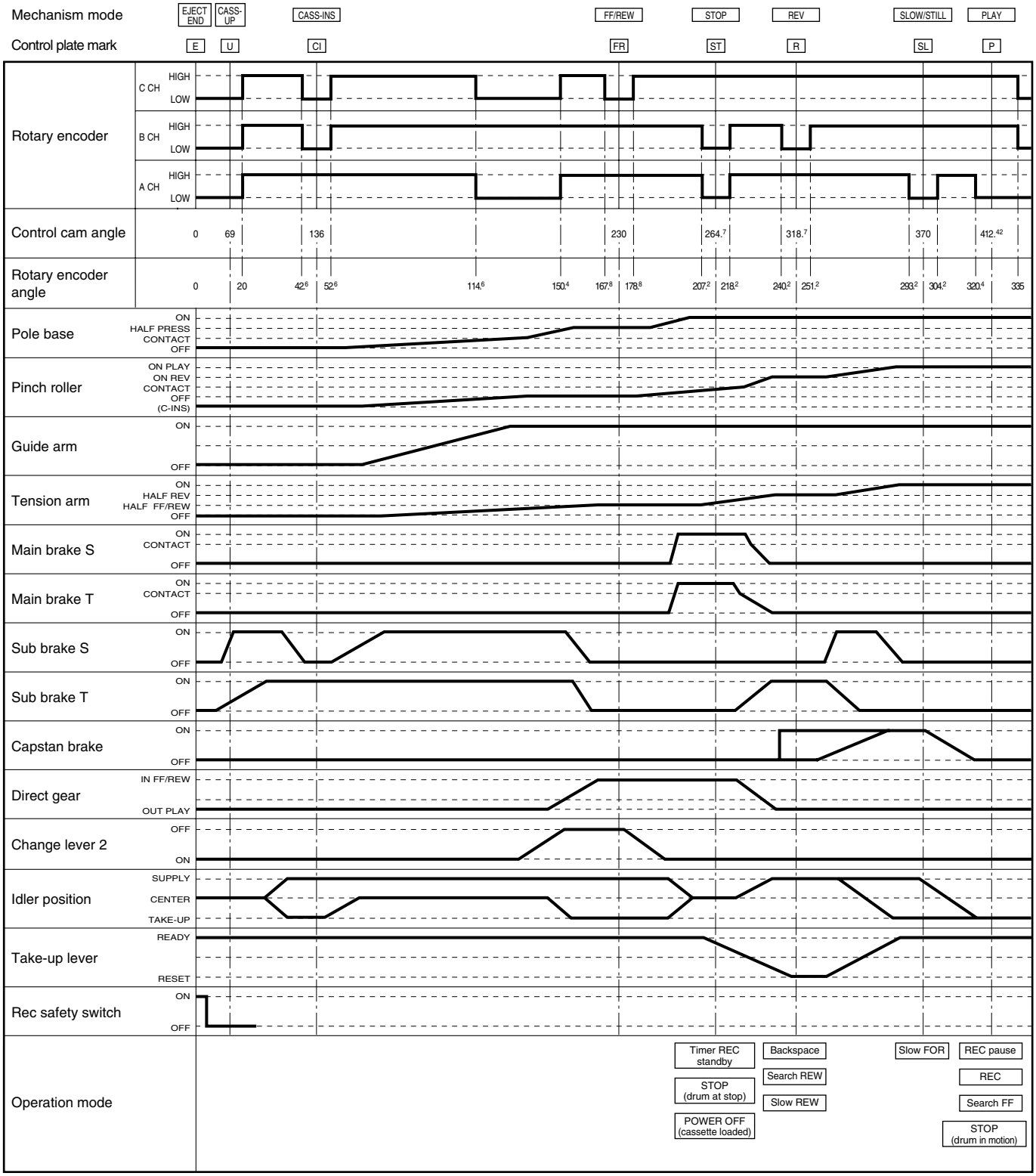


Fig. 2-3-5a

Mechanism Timing Chart



SECTION 3
ELECTRICAL ADJUSTMENT

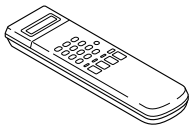
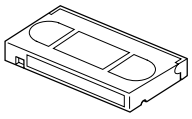
3.1 PRECAUTION

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

3.1.1 Required test equipments

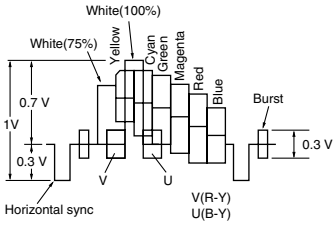
- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Frequency counter
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [PAL/NTSC]
- Recording tape
- Digit-key remote controller(provided)

3.1.2 Required adjustment tools

Jig RCU PTU94023B	Alignment tape (SP, stairstep, PAL) MHPE
	

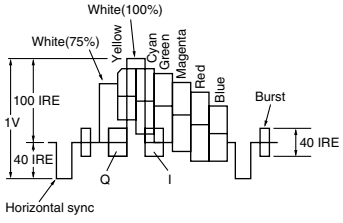
3.1.3 Color (colour) bar signal,Color (colour) bar pattern

● Color(colour) bar signal [PAL]

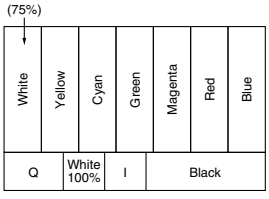


● Color(colour) bar pattern [PAL]

● Color(colour) bar signal [NTSC]



● Color(colour) bar pattern [NTSC]



3.1.4 Switch settings and standard precautions

The SW settings of the VCR and the standard precautions for the electrical adjustments are as follows.

- ***When using the Jig RCU, set its custom code to match the custom code of the VCR.***

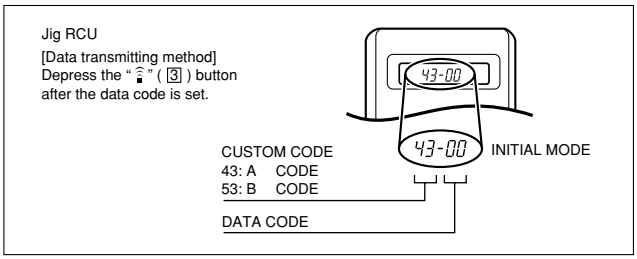


Fig. 3-1-4a Jig RCU [PTU94023B]

- ***Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.***
  If the VCR is not equipped with the functions detailed below, setup is not required.

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF

- ***Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.***
- ***In the Signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.***

3.2 SERVO CIRCUIT

3.2.1 Switching point

Signal	(A1) (A2)	• Stairstep signal • Alignment tape (SP,stairstep,PAL) [MHPE]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• VIDEO OUT terminal (75Ω terminated) • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)/slope : –
Adjustment part	(F)	• Jig RCU: Code “5A”
Specified value	(G)	• 6.5 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(4) Adjust tracking by pressing the channel buttons (+, –) so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

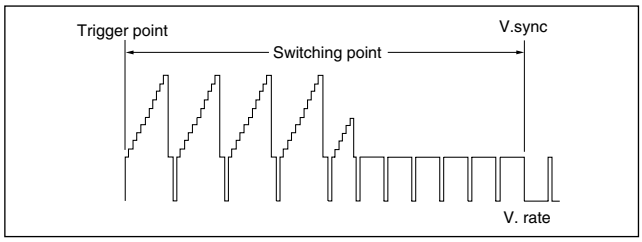


Fig. 3-2-1a Switching point

3.2.2 Slow tracking preset

Signal	(A1) (A2) (A3)	• Ext. input • Color (colour) bar signal [PAL] • Color (colour) bar signal [NTSC]
Mode (Notes)	(B1) (B2) (B3) (B4)	• VHS SP • VHS LP] (PAL) • VHS SP • VHS EP] (NTSC)
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig RCU: Code “71“ or “72”
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Press the channel buttons (+, –) simultaneously to enter the manual tracking mode. This also brings tracking to the center (centre).
(3) Set the VCR to the FWD slow (+1/6x) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow (–1/6x) mode.
(8) Repeat steps (1) to (7) in the mode (B2).
(9) Record the signal (A3) in the mode (B3), and play back the recorded signal.
(10) Repeat steps (2) to (7).
(11) Repeat steps (9) and (10) in the mode (B4).

Notes:

- ***For FWD slow (+1/6x) playback, transmit the code “08” from the Jig RCU to enter the slow playback mode, and transmit the code “D0” for REV slow (–1/6x) mode.***
- ***For 2 Head models, adjustments should generally be performed in SP recording mode. However, for 2 Head models equipped with LP (or EP) mode, adjustments should be performed in LP (or EP) recording mode only.***

3.3 VIDEO CIRCUIT

3.3.1 AUTO PICTURE initial setting

Signal	(A1) (A2) (A3)	• Ext. input • Video: Optional • VHS tape
Mode	(B)	• EE → Auto adjust (SP/LP REC → PB)
Adjustment part	(F)	• Jig RCU : Code “58”
Specified value	(G)	• STOP mode
Adjustment tool	(H)	• Jig RCU

(1) Insert the cassette tape (A3).
(2) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed. When the VCR enters the eject mode, repeat steps (1) to (2) again.

Note:

- ***When this adjustment is performed for models that are equipped with the NTSC Record mode, the color (colour) system of the VCR will compulsorily become “PAL”. When it is required to return the color (colour) system to “AUTO”, this can be achieved by operating the VCR menu or transmitting the code “60” from the Jig RCU.***

3.4 SYSCON CIRCUIT

Note:

- ***When perform this adjustment, remove the Mechanism assembly.***

3.4.1 Timer clock

Signal	(A)	• No signal
Mode	(B)	• EE
Equipment	(C)	• Frequency counter
Measuring point Measuring point Short point	(D1) (D2) (D3) (D1) (D2) (D3)	[HR-J271MS/J471MS] • IC3001 pin 29 • IC3001 pin 57 • C3015 + and – [HR-J677MS/J777MS] • IC3001 pin 61 • IC3001 pin 24 • C3026 + and –
Adjustment part	(F)	[HR-J271MS/J471MS] • C3018 (TIMER CLOCK) [HR-J677MS/J777MS] • C3025 (TIMER CLOCK)
Specified value	(G)	• 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec)

[HR-J271MS/J471MS]

(1) Connect the frequency counter to the measuring point (D1).
(2) Connect the short wire between the short point (D2) and GND.
(3) Short the leads of capacitor (D3) once in order to reset the microprocessor of the SYSCON.
(4) Adjust the Adjustment part (F) so that the output frequency becomes the specified value (G).

[HR-J677MS/J777MS]

(1) Connect the frequency counter to the measuring point (D1).
(2) Connect the short wire between the short point (D2) and Vcc (5V).
(3) Short the leads of capacitor (D3) once in order to reset the microprocessor of the SYSCON.
(4) Disconnect the short wire between the short point (D2) and Vcc then connect it again.
(5) Adjust the Adjustment part (F) so that the output frequency becomes the specified value (G).

SECTION 4
CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

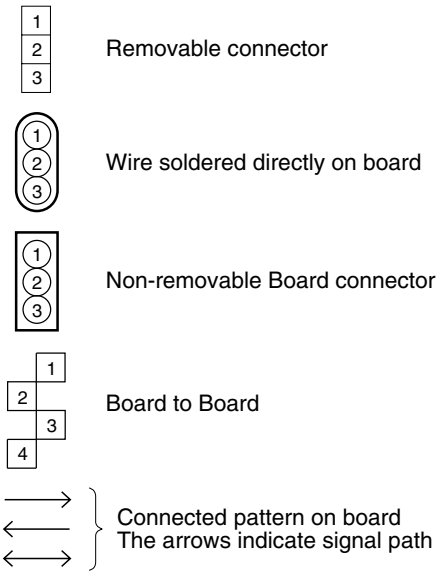
1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values are in μH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

2. Indications of control voltage

AUX : Active at high

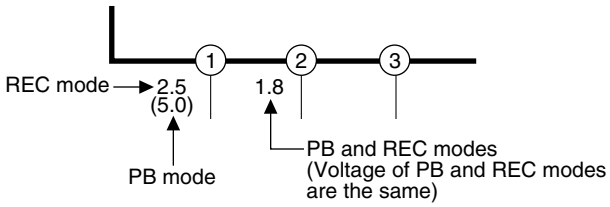
$\overline{\text{AUX}}$ or AUX(L) : Active at low

3. Interpreting Connector indications



4. Voltage measurement

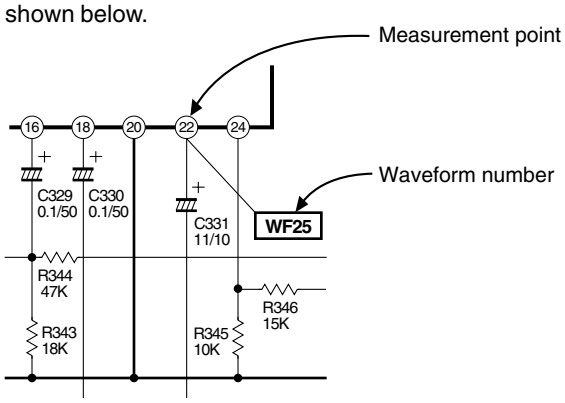
1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
   — : Unmeasurable or unnecessary to measure
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
4) Indication on schematic diagram
   Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



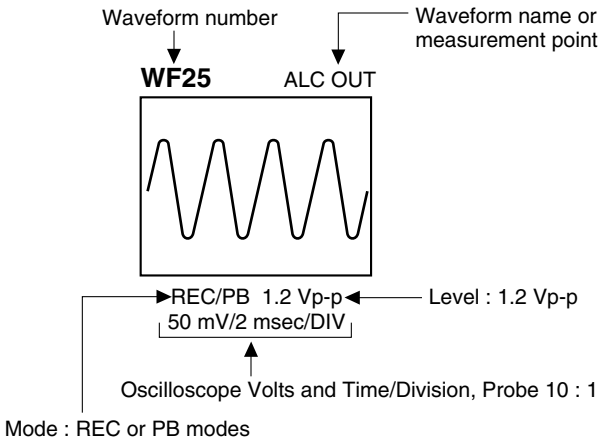
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC : Colour bar signal in SP mode, normal VHS mode
   PB : Alignment tape, colour bar SP mode, normal VHS mode
2) Audio circuits
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode
   PB : REC then playback it
3) Movie Camera circuits
   Measured using a correctly illuminated gray scale or colour bar test chatrs in the E-E mode
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.

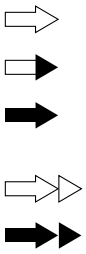


5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.



Playback signal path

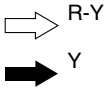
Playback and recording signal path

Recording signal path
(including E-E signal path)

Capstan servo path

Drum servo path

(Example)

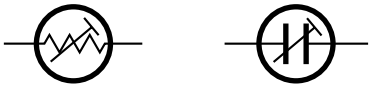


Playback R-Y signal path

Recording Y signal path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.

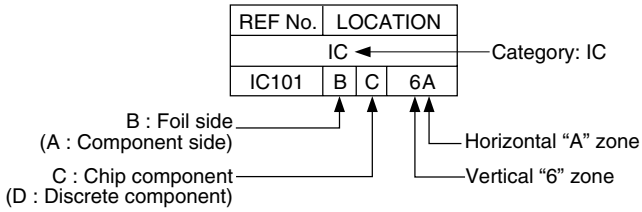
CIRCUIT BOARD NOTES

1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

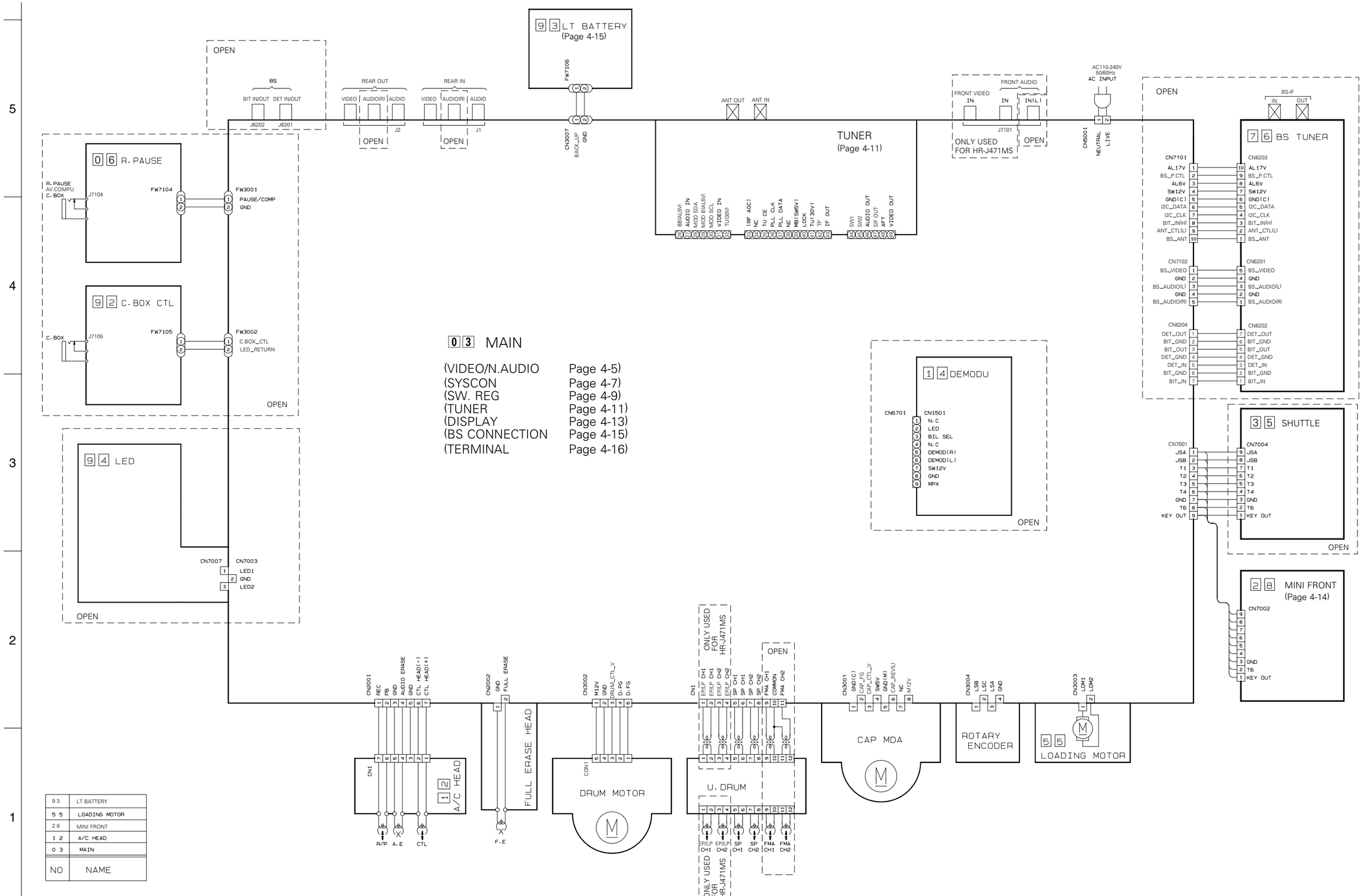
Parts location are indicated by guide scale on the circuit board.



Note:

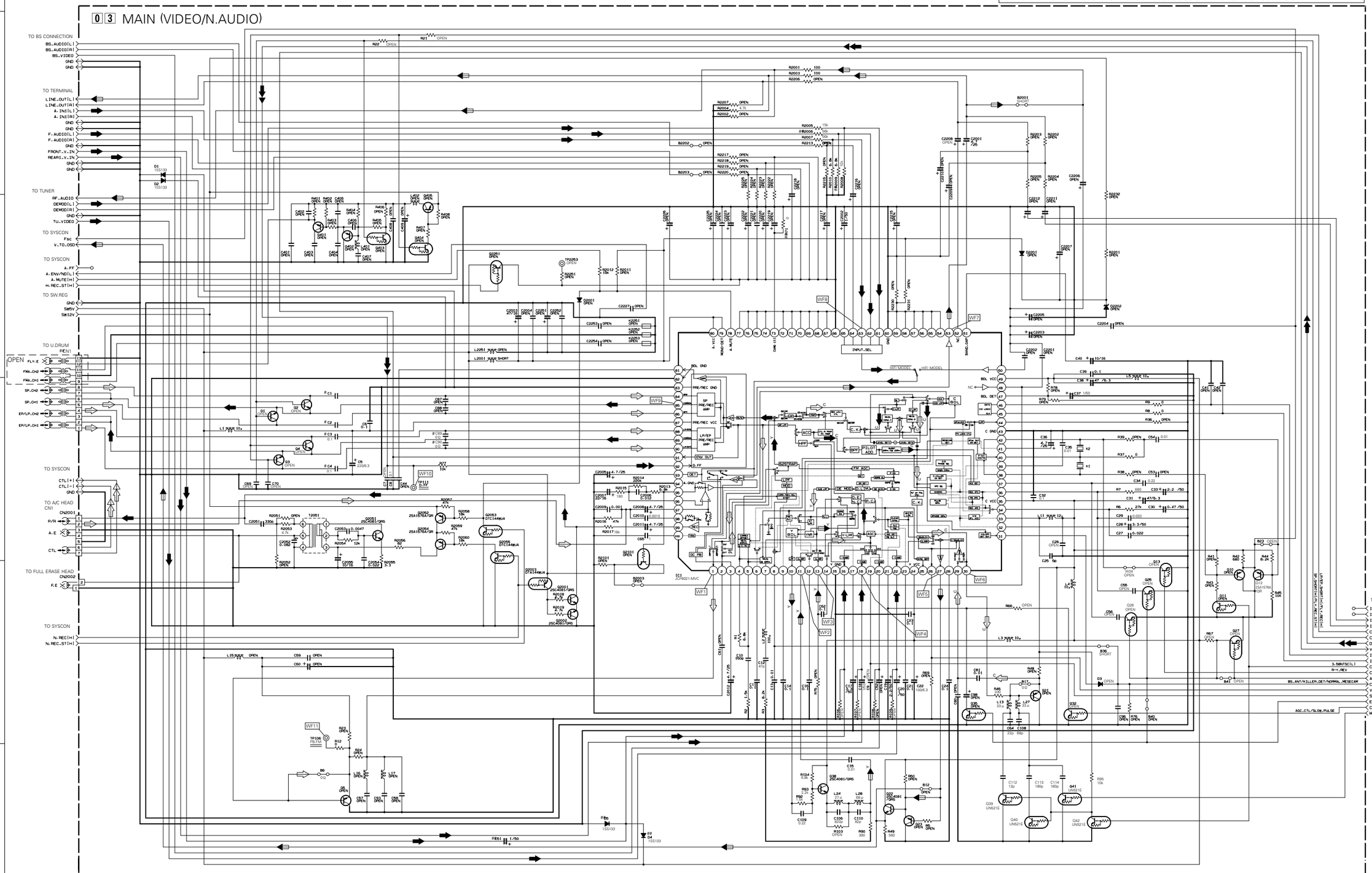
For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

4.1 BOARD INTERCONNECTIONS [HR-J271MS, HR-J471MS]



4.2 VIDEO/N.AUDIO SCHEMATIC DIAGRAM [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

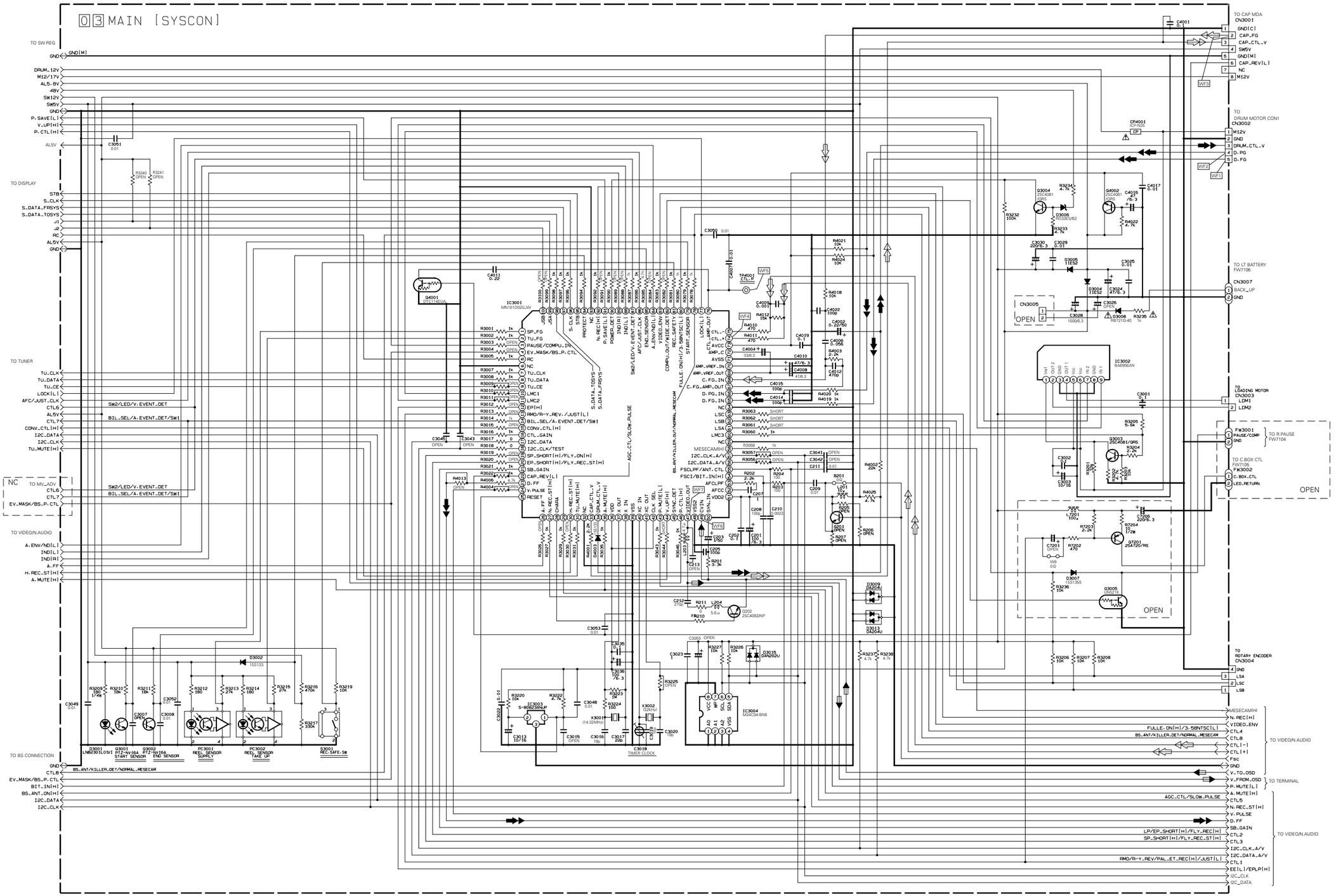


NOTES : 1. For VIDEO/N.AUDIO waveforms, please refer to page 4-35.
2. Comparison chart of models & marks (#).

MODEL	REF.NO.	CN1	D4,D5	C1,C2	C3,C4	C51	C89,C90	R71	R2006,R2009
	HR-J271MS	PIN5-8	NOT USED	0.01 μF	NOT USED	NOT USED	USED	USED	NOT USED
	HR-J471MS	PIN1-8	USED	0.1 μF	USED	USED	NOT USED	NOT USED	USED

4.3 SYSTEM CONTROL SCHEMATIC DIAGRAM [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

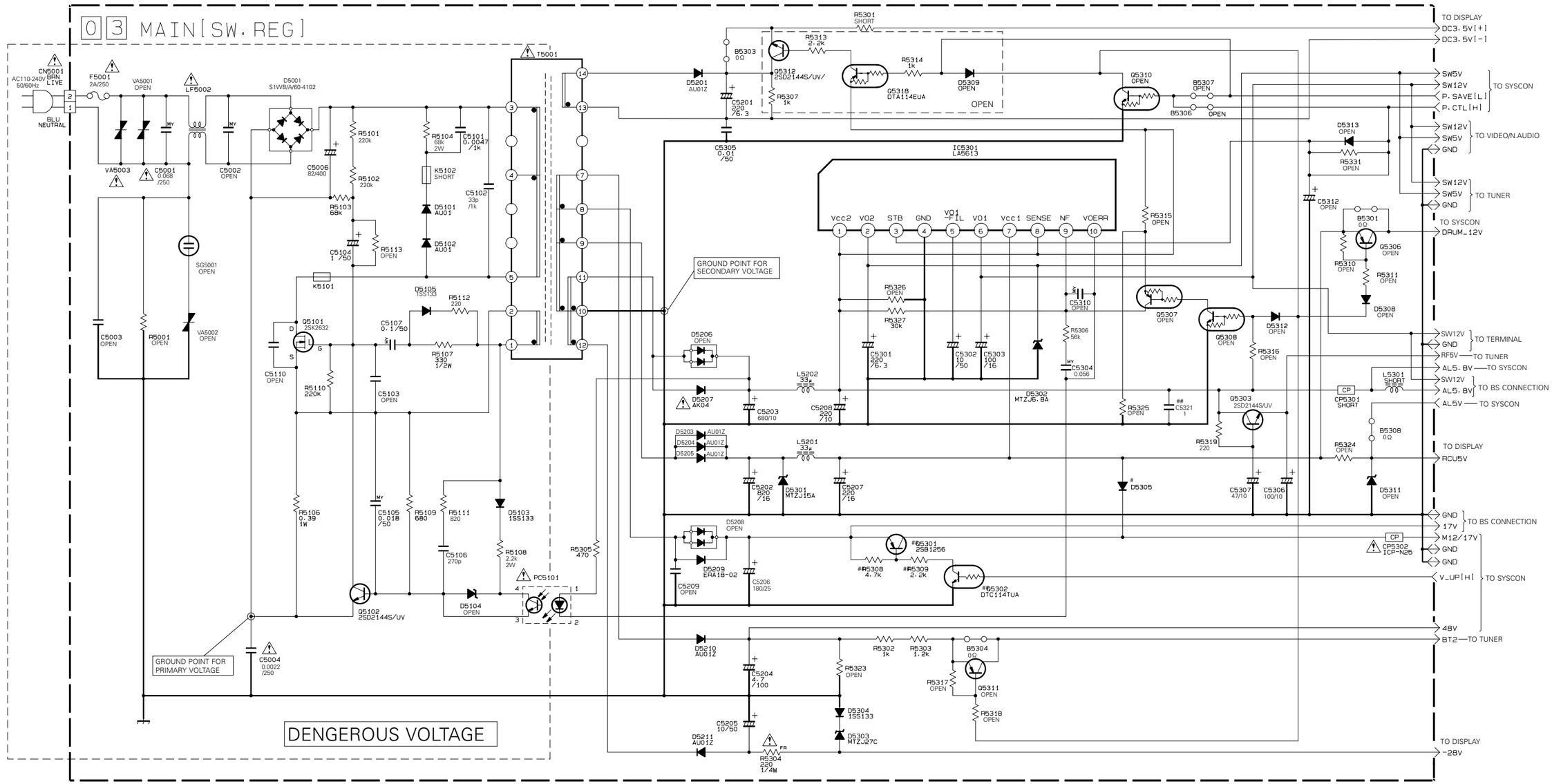


NOTES : 1. For SYSCON waveforms, please refer to page 4-35.
2. Comparison chart of models & marks (#).

MODEL	REF.NO.	R210
	HR-J271MS	5.6kΩ
	HR-J471MS	3.3kΩ

4.4 SWITCHING REGULATOR SCHEMATIC DIAGRAM [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

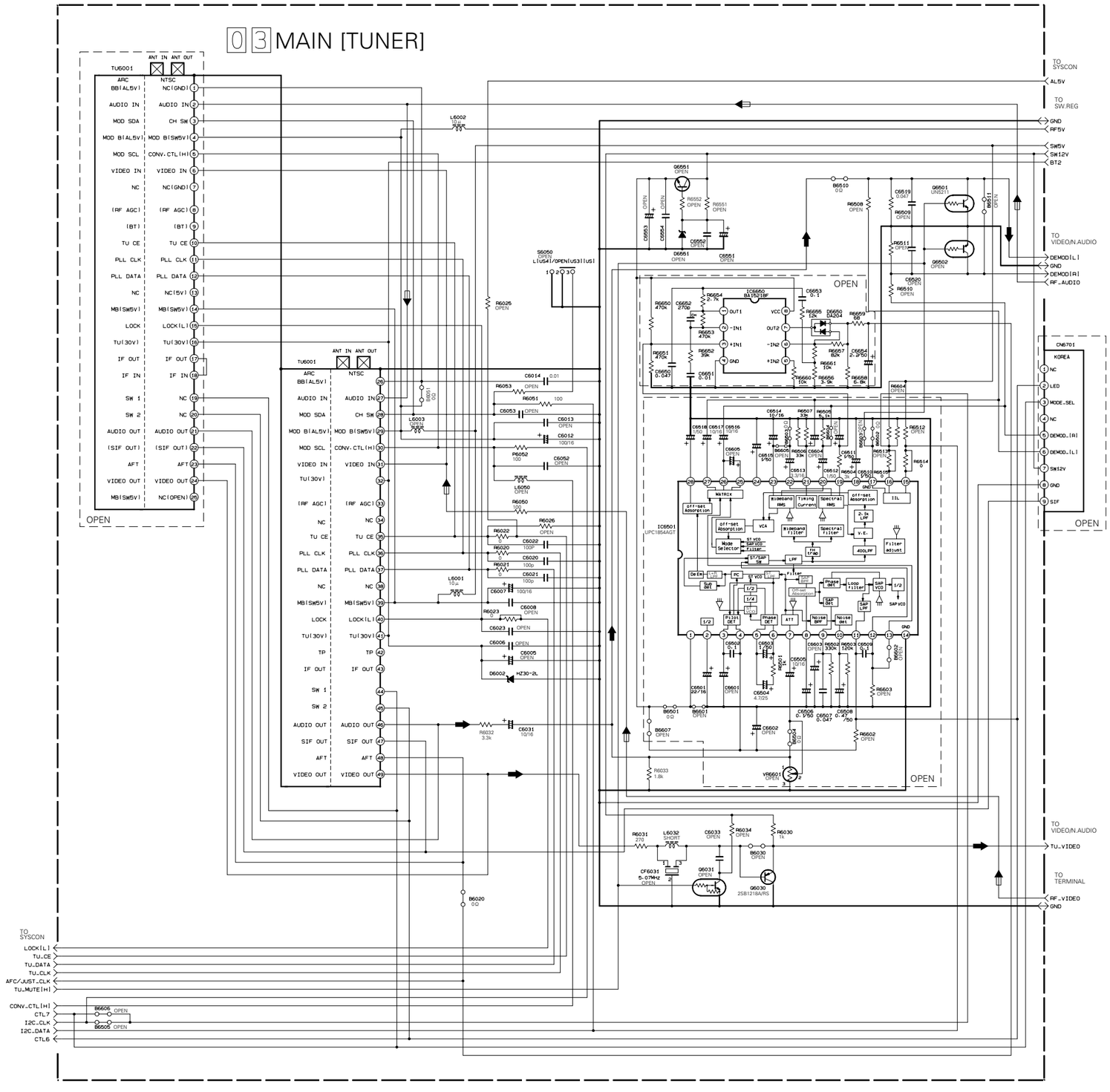


NOTE : Comparison chart of models & marks (#).

REF.NO.		Q5301,Q5302	D5305	C5321	R5308,R5309
2COMM	HR-J271MS	NOT USED	SHORT	NOT USED	NOT USED
	HR-J471MS	USED	11ES2	USED	USED

4.5 TUNER SCHEMATIC DIAGRAM [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

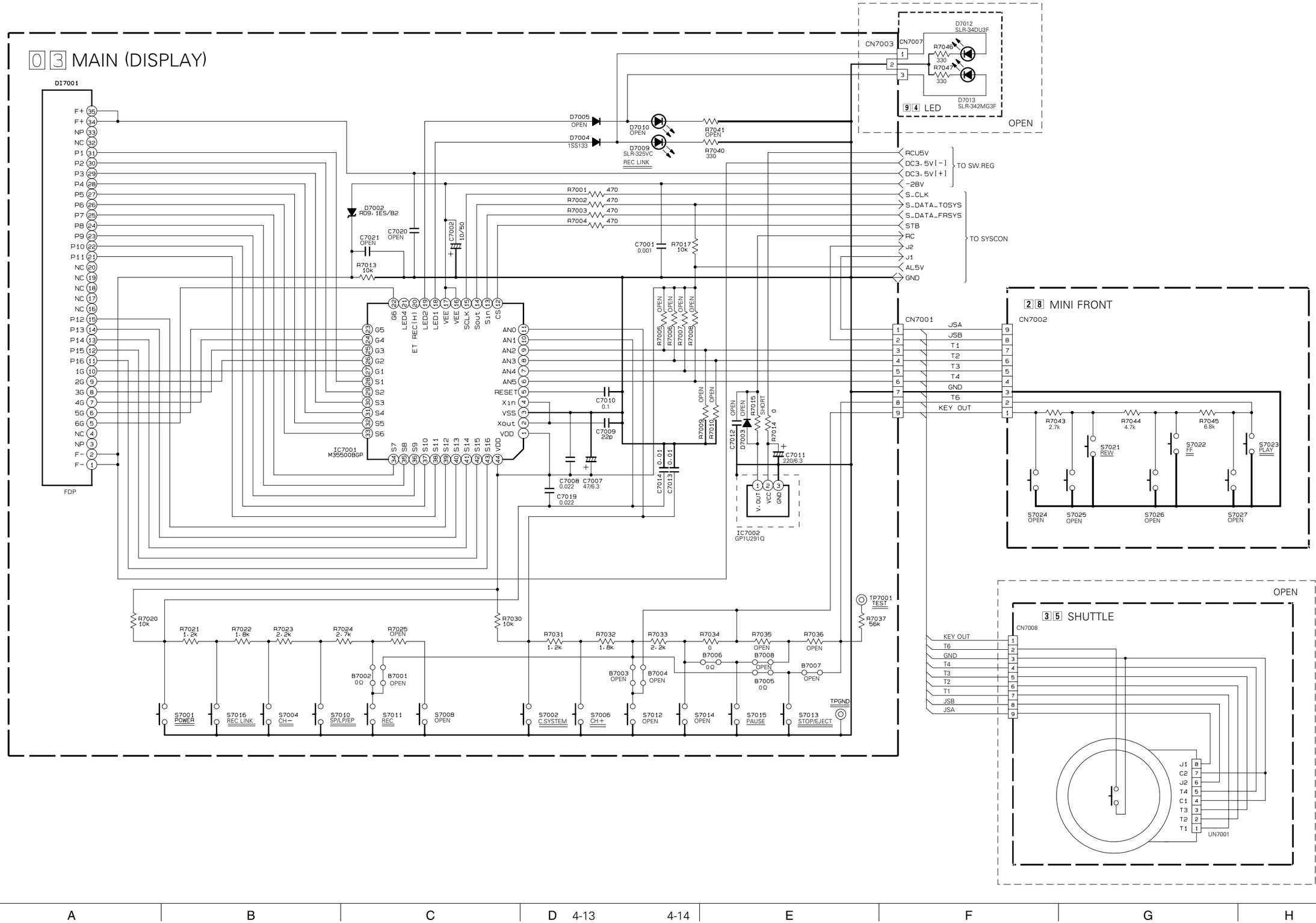


A B C D E F G H

4-11 4-12

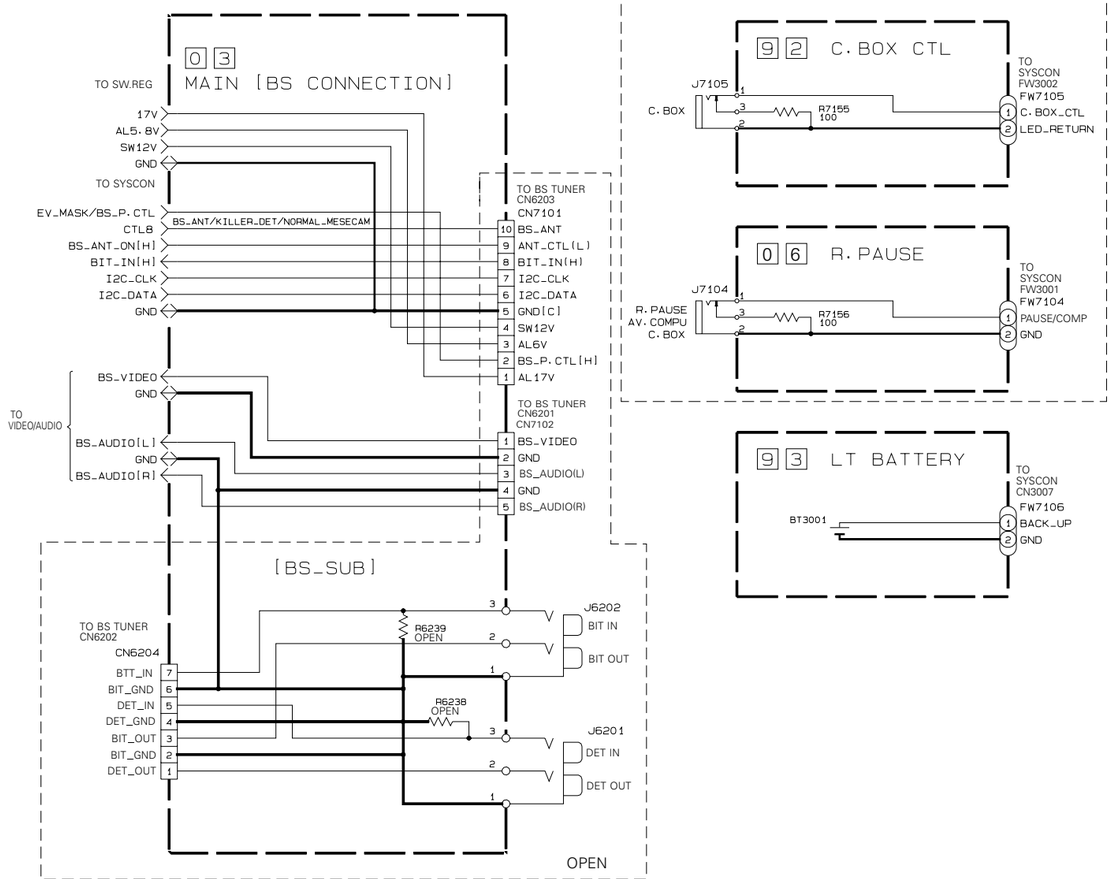
4.6 DISPLAY AND MINI FRONT SCHEMATIC DIAGRAMS [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



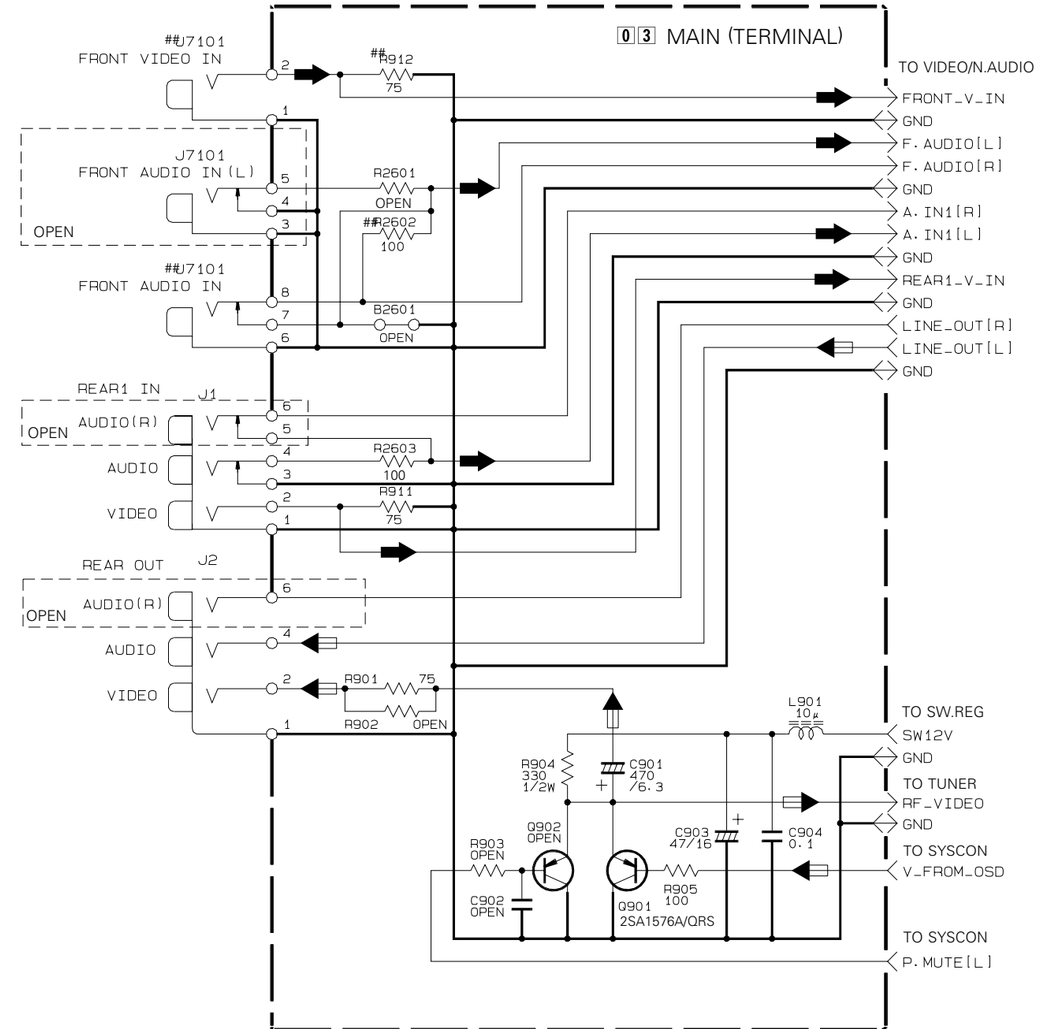
4.7 BS CONNECTION AND LITHIUM BATTERY SCHEMATIC DIAGRAMS [HR-J271MS, HR-J471MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.8 TERMINAL SCHEMATIC DIAGRAM [HR-J271MS, HR-471MS]

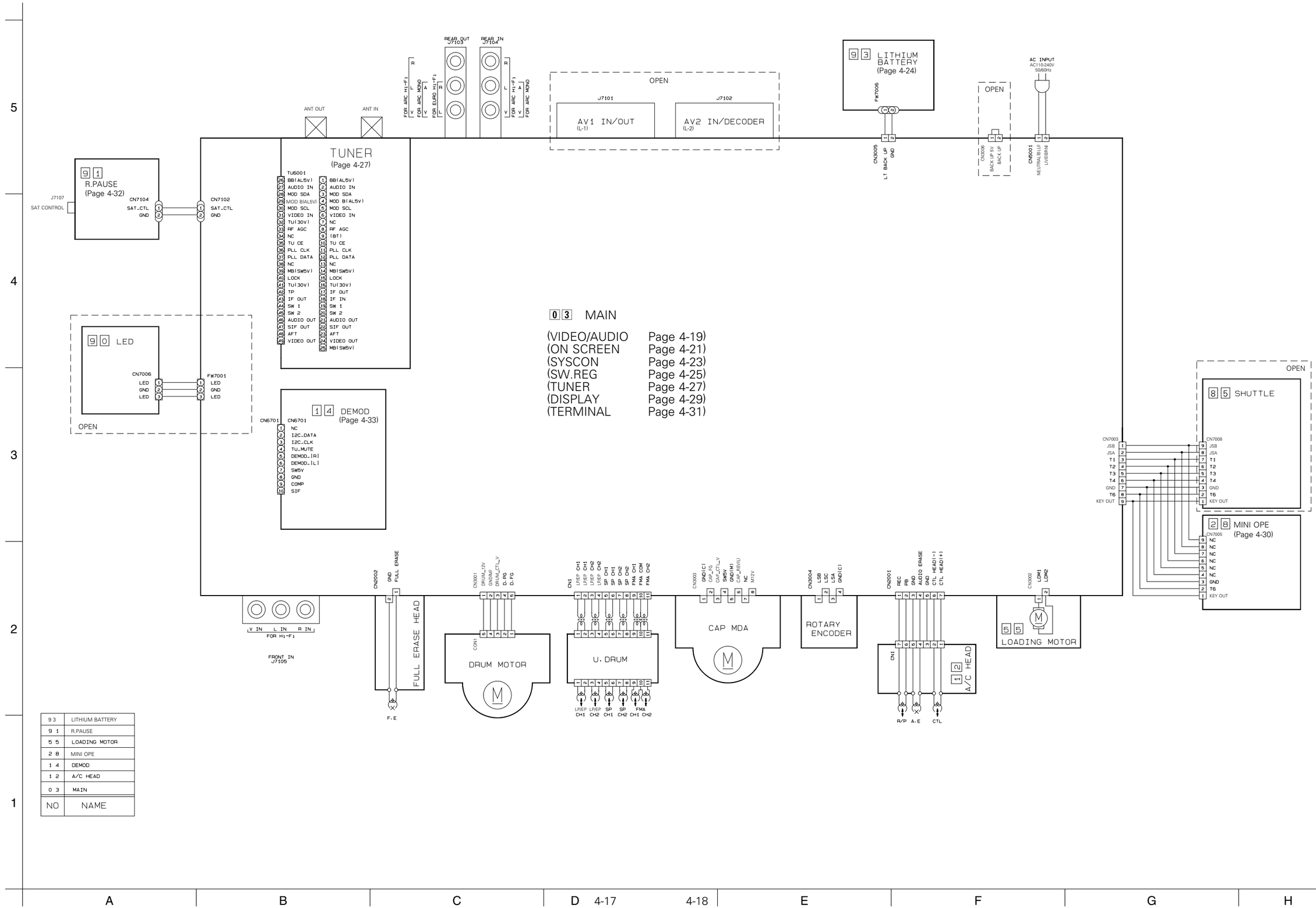
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : Comparison chart of models & marks (#).

REF.NO.		J7101	R912,R2602
MODEL	HR-J271MS	NOT USED	NOT USED
	HR-J471MS	USED	USED

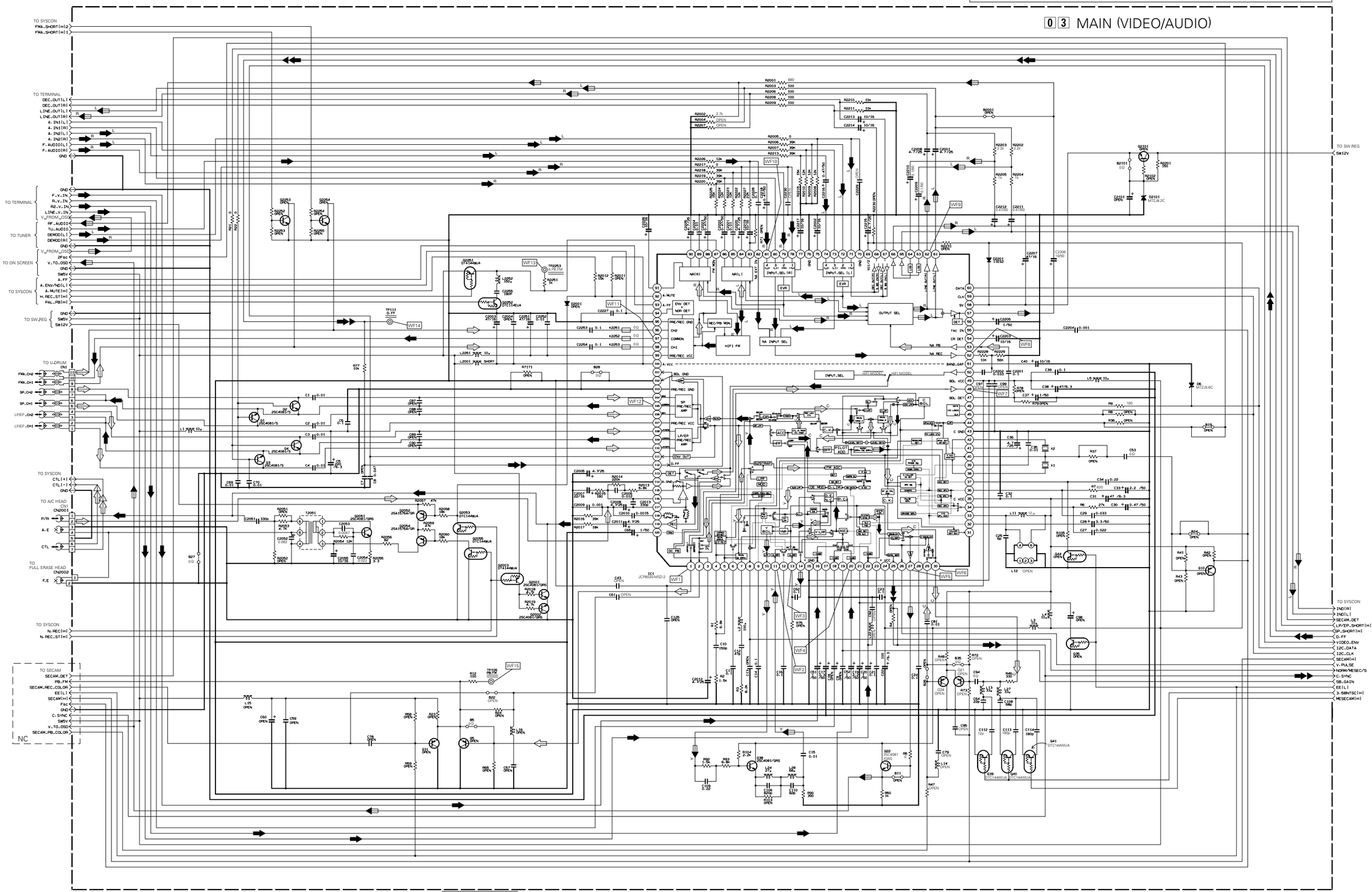
4.9 BOARD INTERCONNECTIONS [HR-J677MS, HR-J777MS]



93	LITHIUM BATTERY
91	R.PAUSE
55	LOADING MOTOR
28	MINI OPE
14	DEMOD
12	A/C HEAD
03	MAIN
NO	NAME

4.10 VIDEO/AUDIO SCHEMATIC DIAGRAM [HR-J677MS, HR-J777MS]

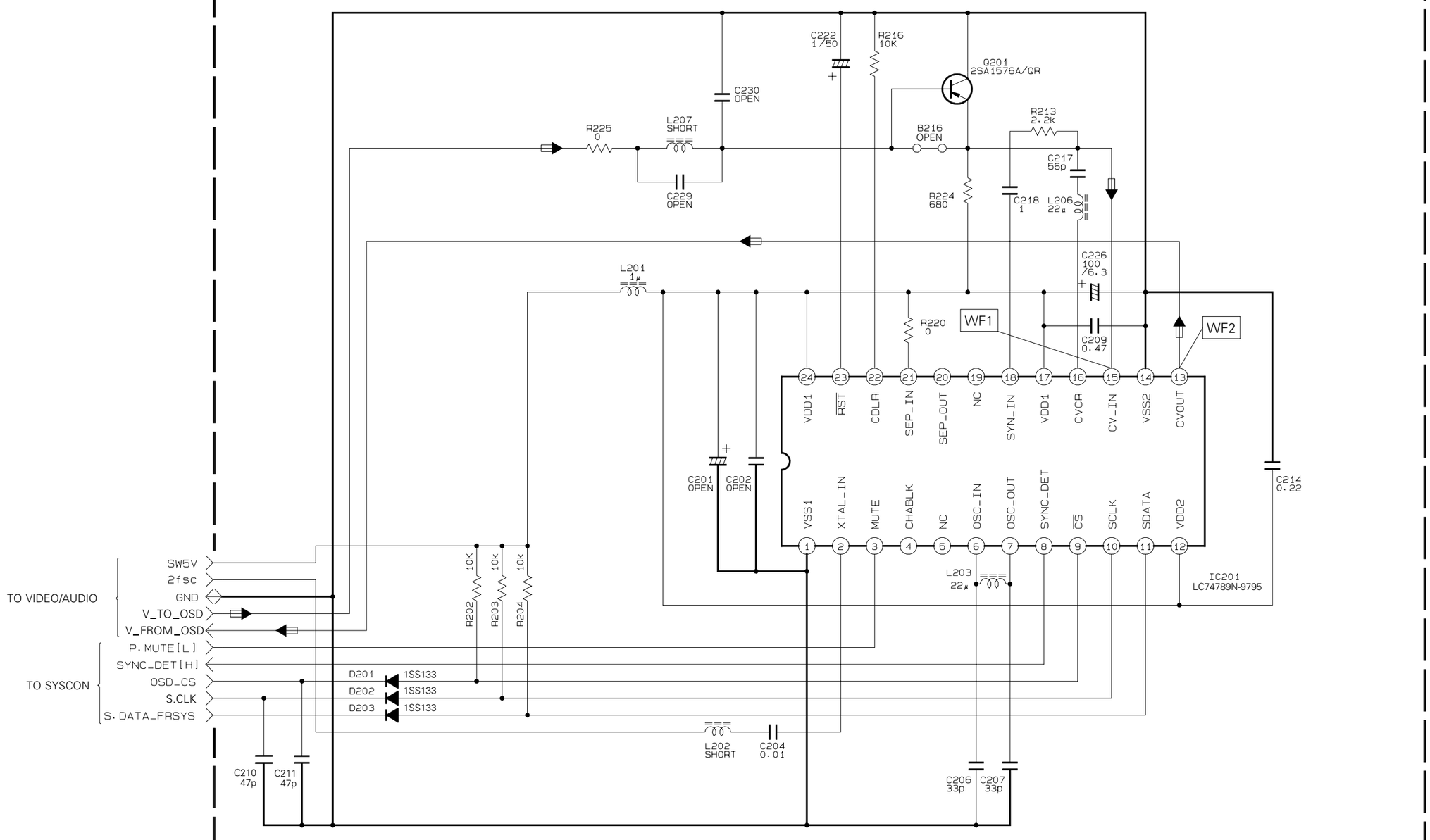
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



NOTE : For VIDEO/AUDIO waveforms, Please refer to page 4-36.

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

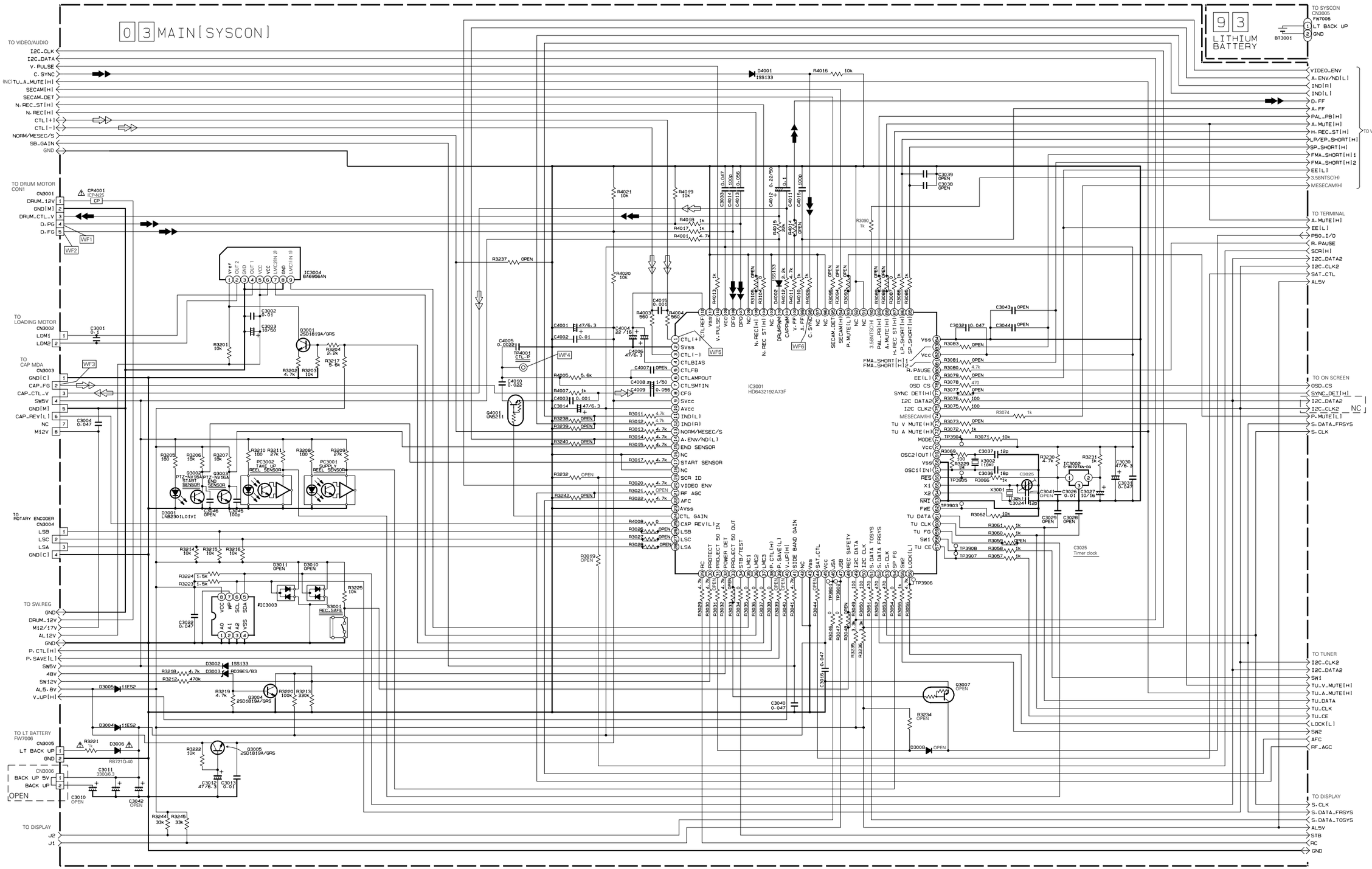
0 3 MAIN (ON SCREEN)



NOTE : For ON SCREEN waveforms, please refer to page 4-36.

4.12 SYSTEM CONTROL AND LITHIUM BATTERY SCHEMATIC DIAGRAMS [HR-J6777MS, HR-J777MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

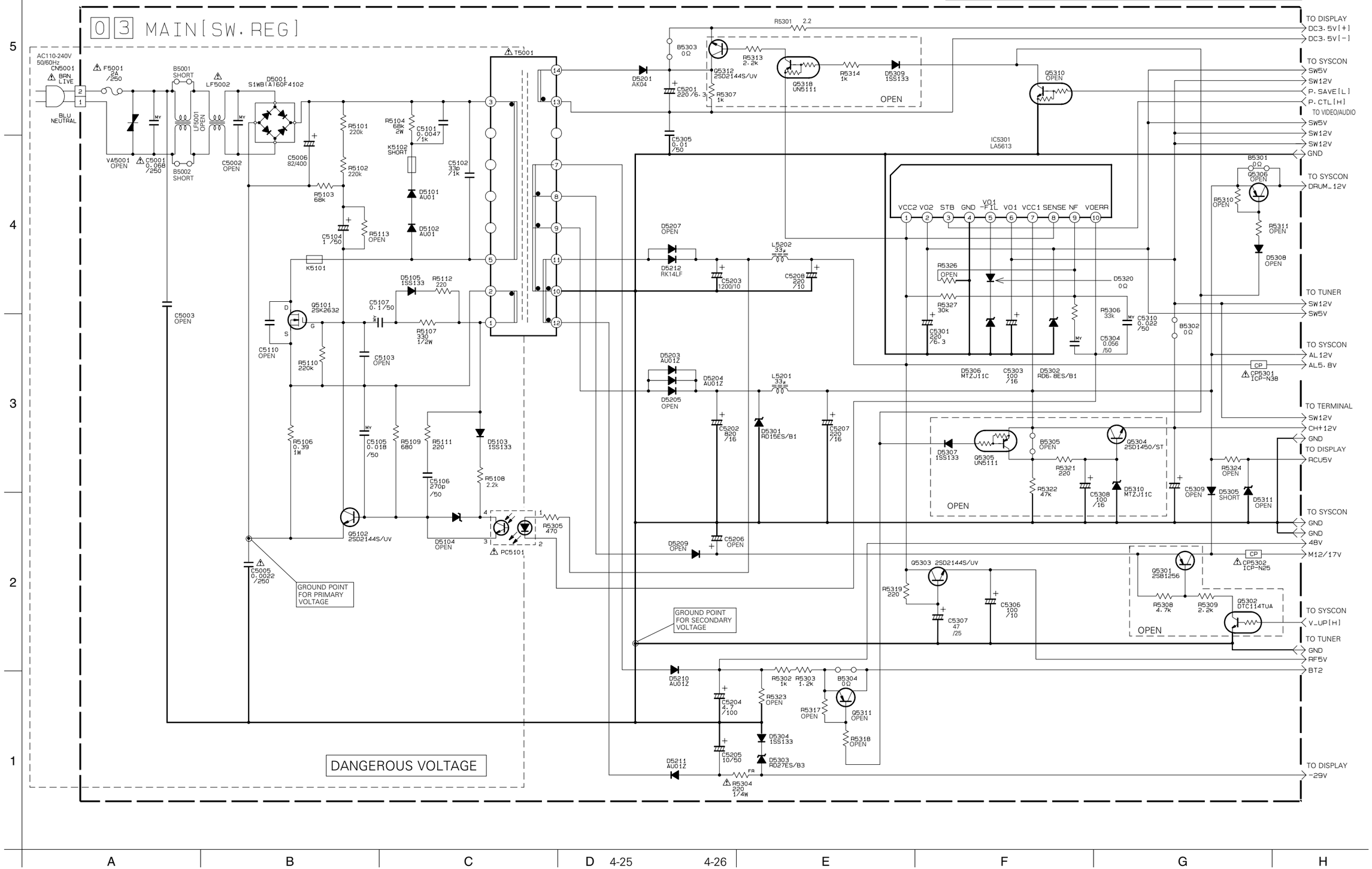


NOTES : 1. For SYSCON waveforms, please refer to page 4-36.
2. Comparison chart of models & marks(#).

MODEL	REF.NO.	IC3003
	HR-J677MS	AT24C04-10PC
	HR-J777MS	AT24C08-10PC

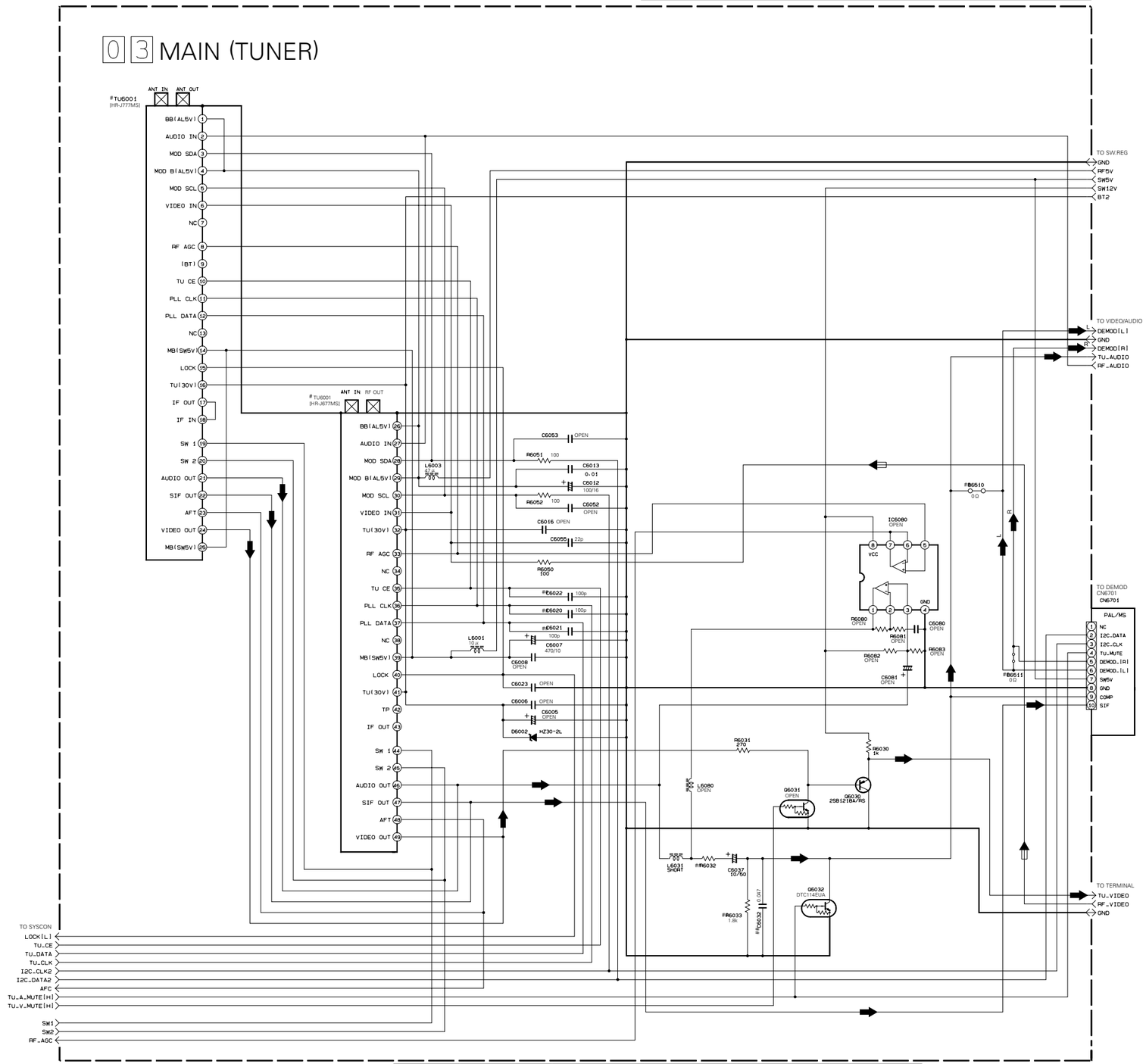
4.13 SWITCHING REGULATOR SCHEMATIC DIAGRAM [HR-J677MS, HR-J777MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.14 TUNER SCHEMATIC DIAGRAM [HR-J677MS, HR-J777MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

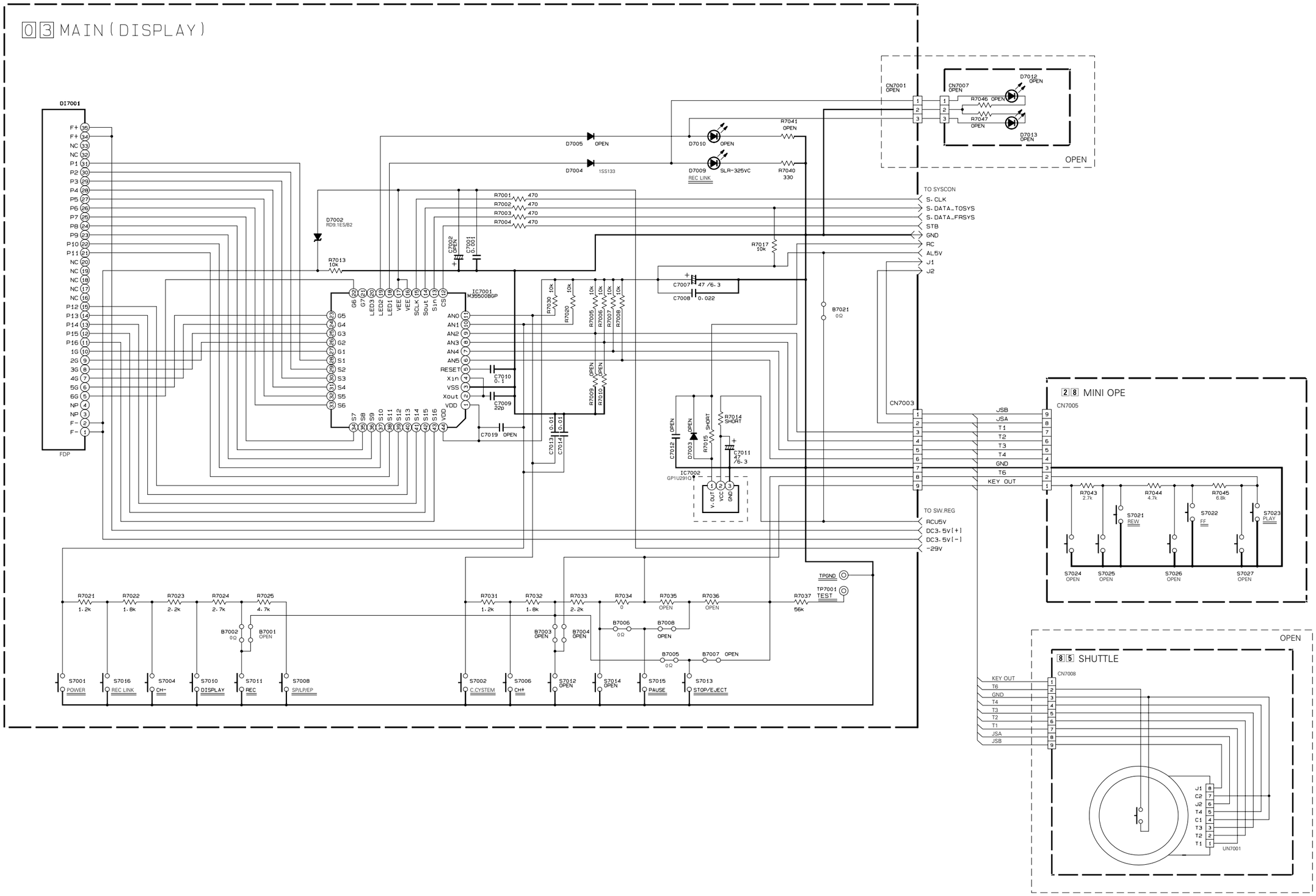


NOTE : Comparison chart of models & marks(#).

	REF.NO.	TU6001	R6032	R6033	C6020-C6022 C6032	B6510 B6511
2CD	HR-J677MS	QAU0150-002	2.2kΩ	USED	USED	USED
	HR-J777MS	QAU0111-001	0Ω	NOT USED	NOT USED	NOT USED

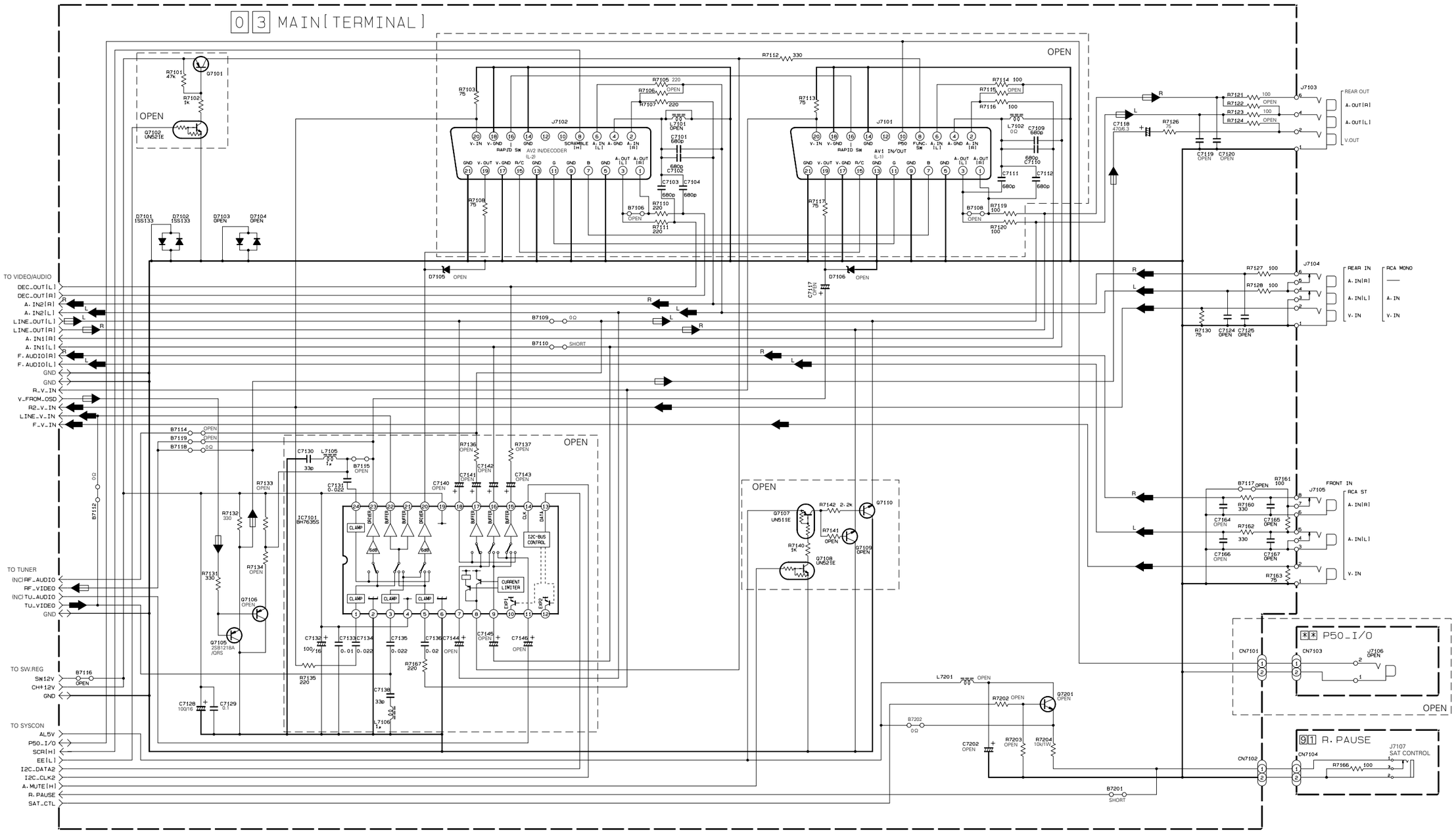
4.15 DISPLAY AND MINI OPE SCHEMATIC DIAGRAMS [HR-J677MS, HR-J777MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.16 TERMINAL AND R.PAUSE SCHEMATIC DIAGRAMS [HR-J677MS, HR-J777MS]

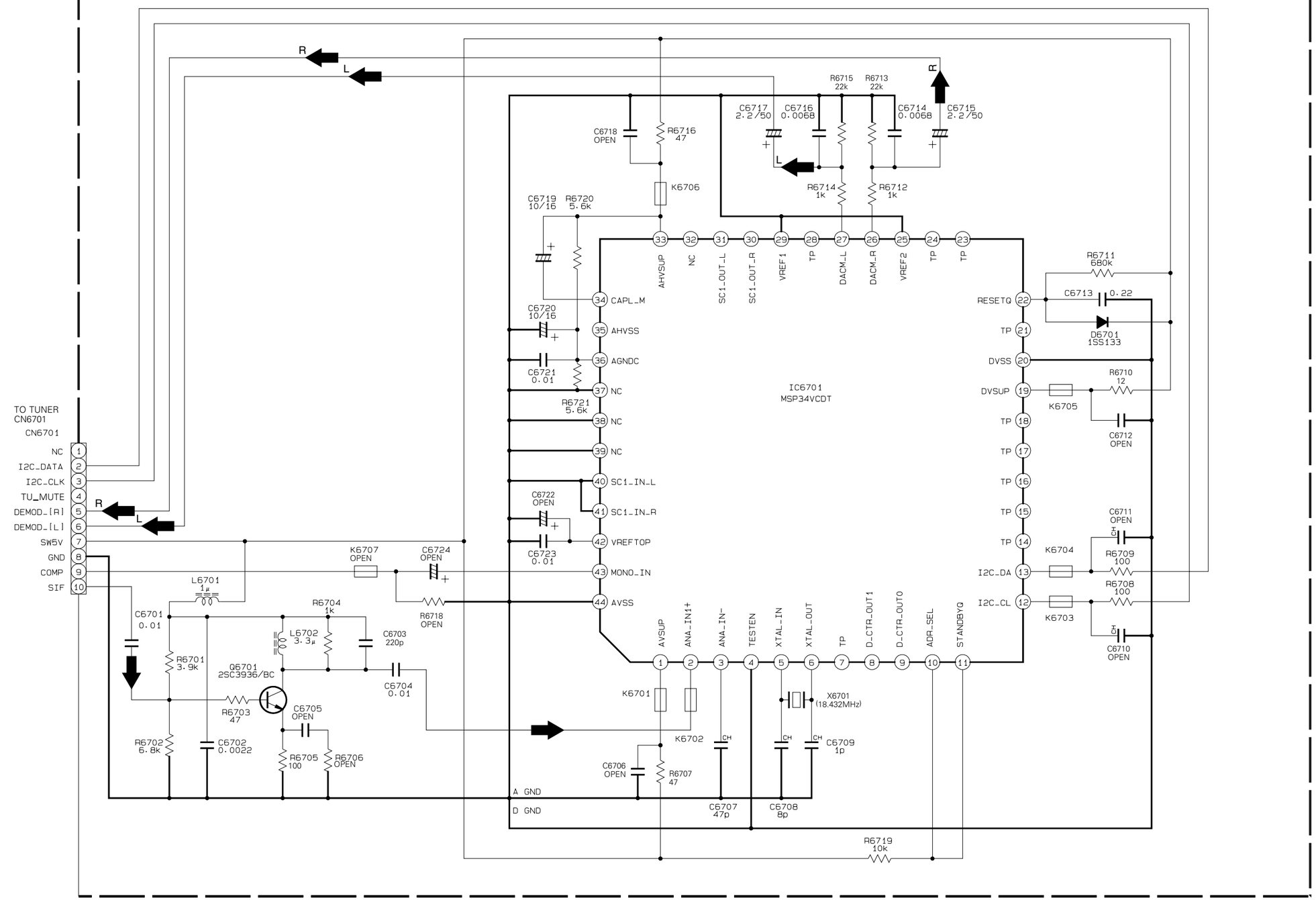
NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.



4.17 DEMODULATOR SCHEMATIC DIAGRAM [HR-J777MS]

NOTE : When ordering parts, be sure to order according to the Part Number indicated in the Parts List.

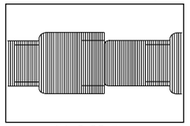
14 DEMOD



WAVEFORMS [HR-J271MS, HR-J471MS]

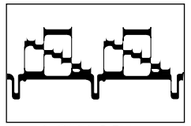
— VIDEO/N.AUDIO —

WF1 IC1-1



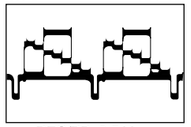
PB 0.68 Vp-p
20 mV/5 msec/DIV

WF2 IC1-11



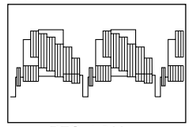
REC/PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF3 IC1-13



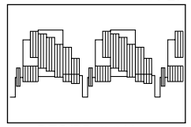
REC/PB 0.5 Vp-p
20 mV/20 µsec/DIV

WF4 IC1-18



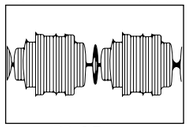
REC 1.0 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-27



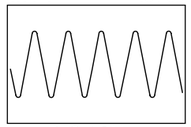
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF6 IC1-30



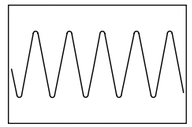
PB 0.7 Vp-p
20 mV/20 µsec/DIV

WF7-1 IC1-53



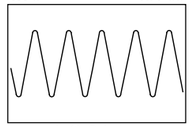
REC 1.0 Vp-p
20 mV/0.5 msec/DIV

WF7-2 IC1-53



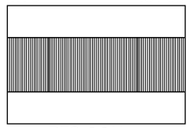
PB 1.4 Vp-p
50 mV/0.5 msec/DIV

WF8 IC1-63



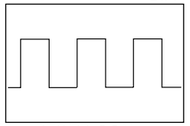
REC 0.1 Vp-p
2 mV/0.5 msec/DIV

WF9 IC1-85



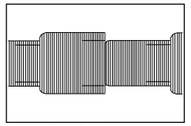
REC 2.2 Vp-p
0.1 V/1 msec/DIV

WF10 TP111 D.FF



REC/PB 3.3 Vp-p
0.1 V/10 msec/DIV

WF11 TP106 PB.FM



PB 0.72 Vp-p
20 mV/5 msec/DIV

— SYSCON —

WF1 CN3002-5 D.FG

REC/PB 4.3 Vp-p
0.1 V/1 msec/DIV

WF2 CN3002-4 D.PG

REC/PB 4.5 Vp-p
0.1 V/10 msec/DIV

WF3 CN3001-2 CAP_FG

REC/PB 2.4 Vp-p
50 mV/0.5 msec/DIV

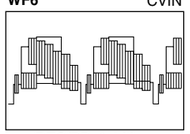
WF4 IC3001-74 CTL_+

REC 3.8 Vp-p
0.1 V/10 msec/DIV

WF5 TP4001 CTL.P

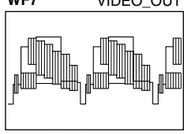
PB 3.3 Vp-p
0.1 V/5 msec/DIV

WF6 IC3001-49 CVIN



REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

WF7 IC3001-47 VIDEO_OUT

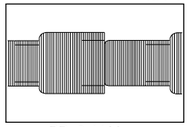


REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

WAVEFORMS [HR-J677MS, HR-J777MS]

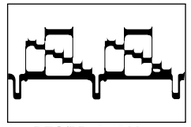
— VIDEO/AUDIO —

WF1 IC1-1



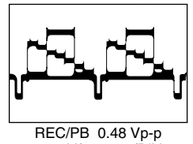
PB 0.44 Vp-p
20 mV/5 msec/DIV

WF2 IC1-11



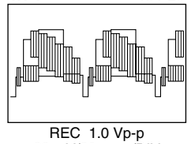
REC/PB 0.48 Vp-p
10 mV/20 µsec/DIV

WF3 IC1-13



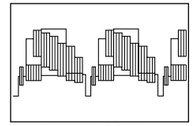
REC/PB 0.48 Vp-p
10 mV/20 µsec/DIV

WF4 IC1-20



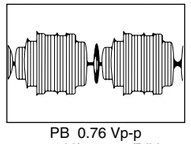
REC 1.0 Vp-p
20 mV/20 µsec/DIV

WF5 IC1-27



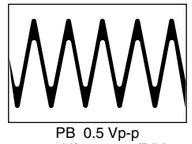
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF6 IC1-30



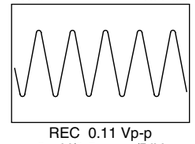
PB 0.76 Vp-p
20 mV/20 µsec/DIV

WF7 IC1-48



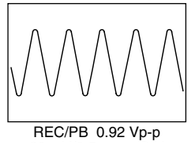
PB 0.5 Vp-p
10 mV/0.5 msec/DIV

WF8 IC1-52



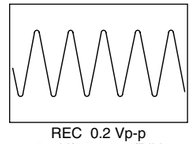
REC 0.11 Vp-p
2 mV/0.5 msec/DIV

WF9 IC1-62



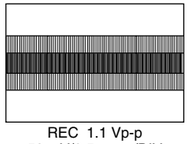
REC/PB 0.92 Vp-p
20 mV/0.5 msec/DIV

WF10 IC1-81



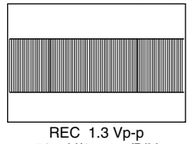
REC 0.2 Vp-p
5 mV/0.5 msec/DIV

WF11 IC1-97



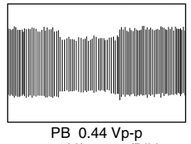
REC 1.1 Vp-p
50 mV/0.5 msec/DIV

WF12 IC1-105



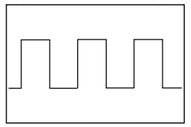
REC 1.3 Vp-p
50 mV/1 msec/DIV

WF13 TP2253 A.PB.FM



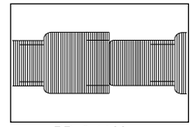
PB 0.44 Vp-p
20 mV/5 msec/DIV

WF14 TP111 D.FF



REC/PB 3.6 Vp-p
0.1 V/10 msec/DIV

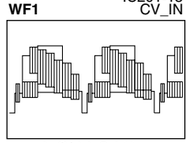
WF15 TP106 PB.FM



PB 0.44 Vp-p
20 mV/2 msec/DIV

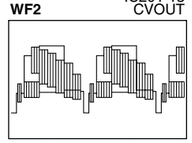
— ON SCREEN —

WF1 IC201-15 CV_IN



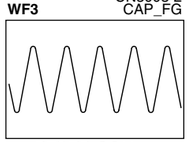
REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

WF2 IC201-13 CVOUT



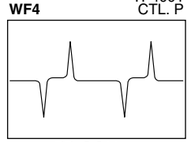
REC/PB 2.1 Vp-p
50 mV/20 µsec/DIV

WF3 CN3003-2 CAP_FG



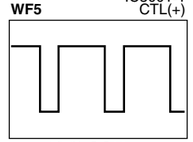
REC/PB 2.8 Vp-p
50 mV/0.5 msec/DIV

WF4 TP4001 CTL. P



PB 2.6 Vp-p
50 mV/10 msec/DIV

WF5 IC3001-1 CTL(+)



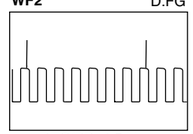
REC 3.8 Vp-p
0.1 V/10 msec/DIV

— SYSCON —

WF1 CN3001-4 D.PG

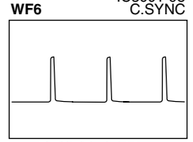
REC/PB 4.6 Vp-p
0.2 V/10 msec/DIV

WF2 CN3001-5 D.FG



REC/PB 4.5 Vp-p
0.1 V/5 msec/DIV

WF6 IC3001-98 C.SYNC



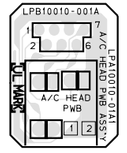
REC/PB 4.4 Vp-p
0.2 V/20 µsec/DIV

4.18 MAIN, A/C HEAD, MINI FRONT, LITHIUM BATTERY AND LOADING MOTOR CIRCUIT BOARDS [HR-J271MS, HR-J471MS]

<03>MAIN
LPB10088-002D

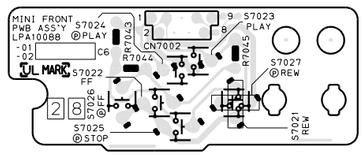
DANGEROUS VOLTAGE

<12>A/C HEAD
LPB10010-001A

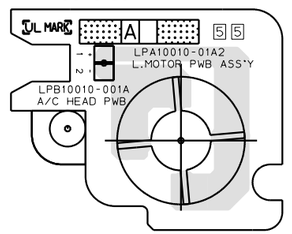


<93>LITHIUM BATTERY
LPB10088-002D

<28>MINI FRONT
LPB10088-002D



<55>LOADING MOTOR
LPB10010-001A



COMPONENT PARTS LOCATION GUIDE ＜MAIN＞ [HR-J271MS, HR-J471MS]

REF.NO.	LOCATION		
CAPACITOR			
C1	B	C	15N
C2	B	C	15N
C3	B	C	14N
C4	B	C	14N
C5	A	D	15N
C6	B	C	14N
C7	B	C	4H
C8	B	C	17N
C9	B	C	9M
C10	B	C	12N
C11	B	C	12N
C12	B	C	10N
C13	B	C	10N
C14	B	C	11M
C15	B	C	12N
C16	B	C	12M
C17	A	D	9M
C18	A	D	8M
C19	A	D	9M
C20	A	D	9M
C21	B	C	11M
C22	A	D	9M
C23	B	C	12M
C24	B	C	12M
C25	B	C	11L
C26	B	C	11L
C27	B	C	11L
C28	A	D	11L
C29	B	C	11L
C30	A	D	10L
C31	A	D	11L
C32	B	C	12L
C33	A	D	11L
C34	B	C	10K
C35	B	C	11K
C36	A	D	12L
C37	A	D	12K
C38	A	D	12K
C39	B	C	13K
C40	A	D	12K
C41	B	C	12K
C42	B	C	11K
C44	B	C	15N
C51	A	D	16G
C52	A	D	9M
C53	B	C	10K
C54	B	C	10K
C55	B	C	10L
C56	B	C	10K
C57	B	C	10N
C58	B	C	11N
C59	B	C	9N
C60	A	D	9N
C61	B	C	11O
C62	B	C	11N
C64	B	C	10M
C65	B	C	13N
C69	B	C	15N
C70	B	C	15N
C80	B	C	12M
C81	B	C	11M
C87	B	C	15N
C88	B	C	15N
C89	B	C	14N
C90	B	C	14N
C93	B	C	11N
C96	B	C	8E
C98	A	D	15H
C106	B	C	11N
C108	B	C	10L
C109	B	C	12N
C110	B	C	12N
C112	B	C	10L
C113	B	C	10L
C114	B	C	10L
C131	B	C	9K
C132	B	C	12J
C201	A	D	11G
C202	B	C	11G
C203	A	D	11G
C205	B	C	11G
C207	B	C	11G
C208	B	C	10G
C209	B	C	10G
C210	B	C	10G
C211	B	C	10G
C212	B	C	13G
C213	B	C	12G
C401	B	C	15O
C402	B	C	15O
C403	B	C	15O
C404	B	C	16O
C405	B	C	16O
C406	B	C	16O
C407	B	C	16O
C408	B	C	17O
C409	A	D	17O
C901	A	D	20O
C902	B	C	20N
C903	A	D	20O
C904	B	C	20N
C2001	A	D	14K
C2002	A	D	14L
C2003	A	D	15M
C2004	B	C	15M
C2005	A	D	14O
C2006	B	C	13N
C2007	A	D	13O
C2008	A	D	13O
C2009	B	C	12O
C2010	B	C	13N
C2011	A	D	13O
C2012	A	D	13N
C2051	A	D	9O
C2052	A	D	9O
C2053	B	C	9P
C2054	B	C	8O
C2055	A	D	10P
C2201	B	C	11J
C2202	B	C	13K
C2203	A	D	13K
C2204	B	C	10J
C2205	A	D	13K
C2206	A	D	13K
C2207	A	D	13J
C2208	A	D	14K
C2209	A	D	14K
C2210	A	D	15K
C2211	A	D	15K
C2212	A	D	15K
C2215	A	D	15K
C2216	A	D	15L
C2217	A	D	15L
C2218	A	D	15L
C2219	A	D	16L
C2220	A	D	16M
C2221	B	C	16M
C2222	A	D	16M
C2223	A	D	16M
C2224	B	C	16M
C2225	A	D	16M
C2226	A	D	15M
C2227	B	C	15M
C2251	A	D	15N
C2252	B	C	15M
C2253	B	C	16N
C2254	B	C	15N
C3001	B	C	7N
C3002	B	C	6M
C3003	A	D	5M
C3007	B	C	4I
C3008	B	C	20I
C3013	A	D	14E
C3015	B	C	13E
C3016	B	C	13F
C3017	B	C	13F
C3018	A	D	13G
C3019	B	C	12F
C3020	B	C	12F
C3022	B	C	13E
C3023	B	C	16B
C3024	A	D	4D
C3025	B	C	4D
C3026	A	D	2D
C3028	A	D	2D
C3029	B	C	6B
C3030	A	D	6B
C3035	B	C	12F
C3036	A	D	13G
C3041	B	C	9G
C3042	B	C	9G
C3043	A	D	13E
C3045	A	D	13E
C3048	B	C	13E
C3049	B	C	11I
C3050	B	C	10E
C3051	B	C	17J
C3052	B	C	17E
C3053	A	D	14E
C3054	B	C	17K
C3055	A	D	16B
C4001	B	C	7M
C4002	A	D	8G
C4004	A	D	8F
C4006	B	C	8F
C4007	B	C	10E
C4008	A	D	7F
C4009	B	C	9F
C4010	A	D	8F
C4011	B	C	7D
C4012	B	C	8F
C4014	B	C	8G
C4015	B	C	8F
C4016	A	D	6B
C4017	B	C	6B
C4019	B	C	10F
C4022	B	C	8F
C5001	A	D	2P
C5002	A	D	2N
C5003	A	D	4P
C5004	A	D	1I
C5006	A	D	2M
C5101	A	D	2M
C5102	A	D	2K
C5103	B	C	3L
C5104	A	D	3L
C5105	A	D	2L
C5106	A	D	4L
C5107	A	D	3L
C5110	A	D	2K
C5201	A	D	1H
C5202	A	D	3H
C5203	A	D	2G
C5204	A	D	3G
C5205	A	D	2H
C5206	A	D	4G
C5207	A	D	2F
C5208	A	D	1F
C5209	A	D	3G
C5301	A	D	2E
C5302	A	D	3E
C5303	A	D	3E
C5304	A	D	4E
C5305	B	C	1C
C5306	A	D	22H
C5307	A	D	22G
C5310	A	D	3E
C5312	A	D	2E
C5321	B	C	18A
C6005	A	D	21L
C6006	B	C	22M
C6007	A	D	21M
C6008	B	C	22M
C6012	A	D	21O
C6013	B	C	22O
C6014	B	C	21P
C6020	B	C	22N
C6021	B	C	22N
C6022	B	C	22N
C6023	B	C	22M
C6030	A	D	21L
C6031	A	D	21L
C6033	B	C	22J
C6052	B	C	22O
C6053	B	C	22P
C6501	A	D	19H
C6502	B	C	19H
C6503	A	D	19H
C6504	A	D	18H
C6505	A	D	20H
C6506	A	D	17H
C6507	B	C	18H
C6508	A	D	17H
C6509	B	C	18H
C6510	A	D	17G
C6511	A	D	18F
C6512	A	D	19G
C6513	A	D	20G
C6514	A	D	20G
C6515	A	D	18G
C6516	A	D	19G
C6517	A	D	19G
C6518	A	D	18F
C6519	B	C	20K
C6520	B	C	21K
C6551	A	D	20J
C6552	B	C	20J
C6553	A	D	20I
C6554	B	C	20J
C6601	A	D	19H
C6602	A	D	20H
C6603	A	D	17H
C6604	A	D	20G
C6605	A	D	18G
C6650	B	C	21D
C6651	B	C	22E
C6652	B	C	22E
C6653	B	C	21D
C6654	A	D	21F
C7001	A	D	11B
C7002	A	D	9B
C7007	A	D	13B
C7008	B	C	13A
C7009	B	C	13B
C7010	B	C	13B
C7011	A	D	7B
C7012	B	C	9B
C7013	B	C	18B
C7014	B	C	17A
C7019	B	C	15A
C7020	B	C	15A
C7021	A	D	8A
C7201	A	D	19L
C7206	A	D	20L

CONNECTOR			
CN1	A	D	14O
CN2001	A	D	9O
CN2002	A	D	19L
CN3001	A	D	7L
CN3002	A	D	7P
CN3003	A	D	7N
CN3004	A	D	9F
CN3005	A	D	3D
CN3007	A	D	13P
CN5001	A	D	1O
CN6204	A	D	19M
CN6701	A	D	21I
CN7001	A	D	2C
CN7003	A	D	16A
CN7101	A	D	21C
CN7102	A	D	20L

DIODE			
D1	A	D	17P
D2	A	D	16P
D3	A	D	7F
D4	A	D	16G
D5	A	D	16G
D2001	A	D	17N
D2201	A	D	16L
D2202	A	D	16L
D3001	A	D	12H
D3002	A	D	5D
D3004	A	D	5C
D3005	A	D	5C
D3006	A	D	6D
D3007	B	C	16D
D3008	A	D	4E
D3009	B	C	11G
D3013	B	C	8P
D3015	B	C	17B
D4003	A	D	14H
D5001	B	C	3N
D5101	A	D	1M
D5102	A	D	1M
D5103	A	D	3L
D5104	A	D	3L
D5105	A	D	2K
D5201	A	D	1I
D5203	A	D	3I
D5204	A	D	3I
D5205	A	D	3I
D5206	A	D	2H
D5207	A	D	2I
D5208	A	D	3H
D5209	A	D	3H
D5210	A	D	4H
D5211	A	D	1H
D5301	A	D	3I
D5302	A	D	1E
D5303	A	D	1E
D5304	A	D	1F
D5305	A	D	3F
D5308	B	C	3F
D5309	A	D	4D
D5311	A	D	4D
D5312	B	C	4E
D5313	B	C	2E
D6002	A	D	21L
D6551	A	D	20J
D6650	B	C	21E
D7002	A	D	7A
D7003	A	D	8B
D7004	A	D	17A
D7005	A	D	17A
D7009	A	D	16A
D7010	A	D	16A

IC			
IC1	B	C	13M
IC3001	B	C	11E
IC3002	A	D	7N
IC3003	B	C	13E
IC3004	A	D	16C
IC5301	A	D	2E
IC6501	B	C	18G
IC6650	B	C	22E
IC7001	B	C	12B
IC7002	A	D	8A

JACK			
J1	A	D	20Q
J2	A	D	21Q
J6201	A	D	15Q
J6202	A	D	16Q
J7101	A	D	20A

COIL			
L1	A	D	16N
L2	A	D	10N
L3	A	D	9L
L4	A	D	9L
L5	A	D	12J
L11	A	D	11L
L13	A	D	10M
L15	A	D	9O
L16	A	D	10N
L17	A	D	11N
L24	A	D	11N
L27	A	D	10L
L28	A	D	12N
L201	A	D	11G
L203	A	D	12G
L204	A	D	13G
L401	A	D	16O
L402	A	D	17O
L901	A	D	20M
L2001	A	D	16N
L2251	A	D	16M
L5201	A	D	3G
L5202	A	D	1F
L5301	A	D	4D
L6001	A	D	21N
L6002	A	D	22H
L6003	A	D	21O
L6032	A	D	22K
L6050	A	D	21N
L7201	A	D	18L

TRANSISTOR			
Q1	B	C	15N
Q2	B	C	15N
Q3	B	C	14O
Q4	B	C	14N
Q5	B	C	10N
Q10	B	C	11K
Q11	B	C	11K
Q12	B	C	11K
Q13	B	C	11K
Q21	B	C	11M
Q22	B	C	9K
Q23	B	C	9L
Q25	B	C	10L
Q26	B	C	10K
Q27	B	C	10K
Q32	B	C	16H
Q35	B	C	14H
Q38	B	C	11N
Q39	B	C	10L
Q40	B	C	10L
Q41	B	C	10L
Q42	B	C	9L
Q201	B	C	10G
Q202	B	C	12G
Q401	B	C	15O
Q402	B	C	16O
Q403	B	C	17O
Q404	B	C	16N
Q405	B	C	16O
Q901	B	C	20N
Q902	B	C	20N
Q2001	B	C	11O
Q2002	B	C	11O
Q2003	B	C	10O
Q2051	B	C	9P
Q2052	B	C	7O
Q2053	B	C	7O
Q2054	B	C	7O
Q2055	B	C	7O
Q2101	B	C	13O
Q2251	B	C	17M
Q3001	A	D	4I
Q3002	A	D	19I
Q3003	B	C	6M
Q3004	B	C	6D
Q3005	B	C	17E
Q4001	B	C	7D
Q4002	B	C	5B
Q5101	A	D	2L
Q5102	A	D	2L
Q5301	A	D	3G
Q5302	B	C	3F
Q5303	A	D	22G
Q5306	A	D	3F
Q5307	B	C	2E
Q5308	B	C	3E
Q5310	B	C	4E
Q5311	B	C	3F
Q5312	A	D	1C
Q5318	B	C	2D
Q6030	B	C	22J
Q6031	B	C	22J
Q6501	B	C	20K
Q6502	B	C	20K
Q6551	A	D	20J
Q7201	A	D	19L
QA	B	C	7J

RESISTOR			
R1	B	C	12N
R2	B	C	12N
R3	B	C	10N
R5	B	C	9L
R6	B	C	11L
R7	B	C	11K
R8	B	C	12K
R9	B	C	12K
R12	A	D	10O
R21	B	C	16N
R22	B	C	17N
R23	B	C	10N
R24	B	C	10N
R36	B	C	12K
R37	B	C	10K
R38	B	C	10K
R39	B	C	11K
R41	B	C	10K
R42	B	C	10K
R43	B	C	11K
R44	B	C	10K
R45	B	C	11K
R46	B	C	11M
R48	B	C	9L
R49	B	C	9K
R50	B	C	9K
R66	A	D	16H
R67	A	D	8K
R69	B	C	9M
R71	B	C	16L
R75	B	C	11M
R76	B	C	8E
R77	A	D	14P
R78	B	C	12K
R79	B	C	12K
R90	B	C	11M
R92	B	C	12N
R93	B	C	12N
R95	B	C	9L
R103	B	C	11N
R104	B	C	11N
R106	B	C	12J
R107	B	C	9N
R108	B	C	10M
R109	B	C	10M
R201	B	C	11G
R202	B	C	11G
R203	B	C	10G
R204	B	C	10G
R205	B	C	10G
R206	B	C	10G
R207	B	C	10G
R210	B	C	14F
R211	B	C	13G
R401	B	C	15O
R402	B	C	16O
R403	B	C	16O
R404	B	C	16O
R405	B	C	16O
R406	B	C	16O
R407	B	C	16N
R408	B	C	16O
R901	B	C	21P
R902	B	C	21P
R903	B	C	20M
R904	A	D	20N
R905	B	C	20M
R911	B	C	20P
R912	B	C	21B
R2001	B	C	13K
R2002	B	C	13J
R2003	B	C	14K
R2004	B	C	14K
R2005	B	C	16K
R2006	B	C	16K
R2007	B	C	16K
R2008	B	C	15K
R2009	B	C	16K
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R2011	B	C	16M
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R2016	B	C	12O
R2017	B	C	11O
R2018	B	C	10O
R2019	B	C	10O
R2051	B	C	9O
R2052	B	C	9P
R2053	B	C	9P
R2054	B	C	9P
R2055	B	C	9O
R2056	B	C	8O
R2057	B	C	7O
R2058	B	C	7O
R2059	B	C	7O
R2060	B	C	7O
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R2218	B	C	16L
R2219	B	C	16L
R2220	B	C	16L
R2222	B	C	15L
R2223	B	C	16L
R2224	B	C	16L
R2225	B	C	16L
R2230	B	C	15K
R2231	B	C	15K
R2232	B	C	17M
R2251	B	C	17M
R2601	B	C	20A
R2602	B	C	19B
R2603	B	C	20P
R3001	B	C	11D
R3002	B	C	11D
R3003	B	C	12D
R3004	B	C	12D
R3005	B	C	12D
R3007	B	C	14C
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R3012	B	C	15D
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R3017	B	C	13E
R3018	B	C	13E
R3019	B	C	15D
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R3022	B	C	14E
R3026	B	C	13F
R3027	B	C	13F
R3029	B	C	13F
R3030	B	C	14F
R3031	B	C	14F
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R3043	B	C	13G
R3044	A	D	12G
R3046	A	D	12G
R3056	B	C	10G
R3057	B	C	9G
R3058	B	C	9J
R3060	B	C	9G
R3061	A	D	9G
R3062	A	D	9G
R3063	A	D	9G
R3078	B	C	9E
R3079	B	C	9E
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R3081	B	C	9E
R3082	B	C	9D
R3083	B	C	9D
R3084	B	C	9D
R3085	B	C	9D
R3086	B	C	9D
R3087	B	C	9D
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R3089	B	C	10D
R3090	A	D	8D
R3091	A	D	8D
R3092	B	C	9D
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R3099	B	C	11D
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R3202	B	C	5M
R3203	B	C	5M
R3204	B	C	5M
R3205	B	C	7G
R3206	B	C	9F
R3207	B	C	9F
R3208	B	C	9F
R3209	A	D	9H
R3210	B	C	7E
R3211	B	C	15C
R3212	B	C	17F
R3213	B	C	16F
R3214	B	C	7G
R3215	B	C	7G
R3216	B	C	5E
R3217	B	C	6D
R3219	B	C	9E
R3220	B	C	13E
R3222	B	C	13E
R3223	B	C	12F
R3224	B	C	12F
R3225	B	C	12F
R3226	B	C	17B
R3227	B	C	17B
R3232	A	D	7C
R3233	B	C	7D
R3234	B	C	6C
R3235	A	D	6P
R3236	B	C	15C
R3237	A	D	13I
R3238	A	D	13I
R3240	B	C	10C
R3241	B	C	10C
R4001	A	D	13G
R4002	B	C	7H
R4003	B	C	8F
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R4006	B	C	14C
R4010	B	C	10E
R4011	B	C	10F
R4012	B	C	9F
R4013	B	C	14C
R4018	B	C	7F
R4019	B	C	8G
R4020	B	C	8G
R4021	B	C	8G
R4022	B	C	6B
R4024	B	C	7G
R4025	B	C	7H
R5001	A	D	4P
R5101	A	D	3M
R5102	A	D	3M
R5103	A	D	3M
R5104	A	D	1L
R5106	A	D	1L
R5107	A	D	2K
R5108	B	C	3L
R5109	A	D	2L
R5110	B	C	3L
R5111	B	C	3M
R5112	B	C	1K
R5113	A	D	3L
R5301	A	D	7A
R5302	B	C	4G
R5303	B	C	4G
R5304	A	D	1F
R5305	B	C	4J
R5306	B	C	3D
R5307	B	C	1I
R5308	B	C	3G
R5309	B	C	3F
R5310	B	C	2F
R5311	B	C	2F
R5313	A	D	1C
R5314	B	C	3D
R5315	B	C	2E
R5316	B	C	4E
R5317	B	C	3F
R5318	B	C	3F
R5319	B	C	22F
R5323	B	C	5G
R5324	B	C	4D
R5325	B	C	3D
R5326	B	C	2D
R5327	B	C	3E
R5331	B	C	2E
R5333	A	D	2F
R5334	A	D	4F
R6020	B	C	21N
R6021	B	C	21M
R6022	B	C	21N
R6023	B	C	21M
R6025	B	C	15D
R6026	B	C	21N
R6030	B	C	21J
R6031	B	C	22K
R6032	B	C	21L
R6033	B	C	21L
R6034	B	C	21J
R6050	A	D	21N
R6051	B	C	19I
R6052	B	C	19I
R6053	B	C	19N
R6238	B	C	15P
R6239	B	C	16P
R6501	B	C	18H
R6502	B	C	18H
R6503	B	C	18H
R6504	B	C	18G
R6505	B	C	19G
R6506	B	C	18F
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R6511	B	C	21K
R6512	B	C	17G
R6513	B	C	17G
R6514	B	C	17G
R6515	B	C	17G
R6551	B	C	20J
R6552	B	C	20J
R6602	B	C	19H
R6603	B	C	18H
R6604	B	C	18F
R6650	B	C	22F
R6651	B	C	22E
R6652	B	C	22E
R6653	B	C	21D
R6654	B	C	21E
R6655	B	C	21E
R6656	B	C	21E
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R6658	B	C	21E
R6659	B	C	21E
R6660	B	C	22E
R6661	B	C	21E
R7001	B	C	10B
R7002	B	C	10B
R7003	B	C	11B
R7004	B	C	11B
R7005	A	D	14A
R7006	B	C	6B
R7007	B	C	7B
R7008	B	C	7B
R7009	B	C	2C
R7010	B	C	2C
R7013	B	C	15A
R7014	B	C	8B
R7015	A	D	8B
R7017	A	D	10B
R7020	B	C	15A
R7021	B	C	17B
R7022	B	C	15B
R7023	B	C	6B
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R7030	B	C	15B
R7031	B	C	6B
R7032	B	C	5B
R7033	B	C	2B
R7034	B	C	1B
R7035	B	C	2B
R7036	B	C	2B
R7037	B	C	3B
R7040	B	C	16A
R7041	B	C	15A
R7202	B	C	19L
R7203	B	C	19L
R7204	A	D	19L
RA	B	C	7J
RB	B	C	7J
RC	B	C	7J
RD	B	C	6J
RE	B	C	7J
RF	B	C	7K
VR6601	A	D	21H

SWITCH			
S3001	A	D	18C
S6050	A	D	18P
S7001	A	D	22B
S7002	A	D	18B
S7004	A	D	7B
S7006	A	D	6B
S7008	A	D	5B
S7010	A	D	4B
S7011	A	D	4B
S7012	A	D	3B
S7013	A	D	2B
S7014	A	D	2B
S7015	A	D	1B
S7016	A	D	17B

TESTPOINT			
TP106	A	D	6P
TP111	A	D	5P
TP2253	A	D	6P
TP4001	A	D	6P
TP7001	A	D	3A
TPGND	A	D	4A

OTHER			
CF6031	A	D	22K
CP4001	A	D	3F
CP5301	A	D	3D
CP5302	A	D	4F
DI7001	A	D	12A
F5001	A	D	1O
FC5001	A	D	2O
FC5002	A	D	1O
FW3001	A	D	21N
FW3002	A	D	20L
K2251	B	C	16N
K2252	B	C	16N
K2253	B	C	16N
K5101	A	D	3K
K5102	A	D	1M
LF5002	A	D	4O
PC0573	A	D	2G
PC3001	A	D	16F
PC3002	A	D	8G
PC5101	A	D	4L
SG5001	A	D	3P
T2051	A	D	9P
T5001	A	D	1K
TU6001	A	D	22P
VA5001	A	D	1P
VA5002	A	D	4P
VA5003	A	D	2P
X1	A	D	12L
X2	A	D	12L
X3001	A	D	13F
X3002	A	D	12G

COMPONENT PARTS LOCATION GUIDE <MAIN > [HR-J677MS, HR-J777MS]

REF.NO.	LOCATION
CAPACITOR	
C1	B C 15N
C2	B C 14N
C3	B C 14N
C4	B C 14N
C5	A D 14N
C6	B C 14N
C7	B C 14O
C8	B C 17O
C9	B C 8M
C10	B C 12N
C11	B C 11N
C12	B C 11N
C13	B C 10N
C14	B C 10N
C15	B C 10N
C16	B C 9N
C17	A D 10M
C18	A D 8M
C19	A D 10M
C20	A D 8M
C21	B C 11M
C22	A D 10M
C23	B C 11M
C24	B C 8L
C25	B C 11M
C27	B C 11M
C28	A D 11M
C29	B C 10L
C30	A D 10M
C31	A D 10L
C32	B C 11L
C33	A D 10L
C34	B C 10L
C35	A D 10K
C36	A D 10L
C37	A D 11K
C38	A D 12K
C39	B C 12K
C40	A D 12K
C43	B C 12L
C51	A D 8M
C52	A D 8M
C53	B C 10K
C57	B C 12O
C59	B C 11N
C60	A D 10N
C61	B C 12N
C62	B C 9N
C64	B C 10K
C65	A D 12O
C69	B C 14N
C70	B C 14N
C78	B C 11N
C79	B C 9K
C81	B C 9L
C87	B C 15N
C88	B C 14N
C89	B C 14N
C90	B C 13N
C92	B C 8L
C94	B C 10L
C95	B C 9K
C97	B C 12J
C98	A D 9M
C99	B C 12J
C106	B C 9N
C108	B C 10K
C109	B C 8N
C110	B C 9N
C112	B C 10K
C113	B C 10K
C114	B C 9K
C125	A D 12L
C201	A D 19G
C202	B C 19H
C204	B C 18F
C206	B C 18H
C207	B C 18H
C209	B C 18H
C210	B C 17G
C211	B C 17G
C212	B C 17G
C213	A D 17F
C214	B C 18H
C215	B C 17H
C216	A D 17H
C217	B C 18I
C218	B C 18H
C222	A D 19G
C225	A D 16G
C226	A D 18H
C229	B C 17H
C230	B C 17H
C301	B C 8J
C302	A D 7K
C303	B C 7J
C304	B C 7J
C305	B C 7J
C306	A D 7K
C307	B C 7K
C308	B C 7J
C309	B C 6J
C310	B C 6K
C311	B C 6K
C312	B C 6J
C313	A D 6J
C314	B C 6J
C315	A D 6I
C316	B C 7J
C317	B C 7J
C318	B C 7J
C319	B C 7I
C320	B C 8J
C321	B C 7J
C322	B C 7J
C2001	A D 13K
C2002	A D 13L
C2003	A D 16N
C2004	B C 16N
C2005	A D 14O
C2006	B C 13O
C2007	A D 13O
C2008	A D 13O
C2009	B C 13O
C2010	B C 13N
C2011	A D 13N
C2012	A D 12N
C2013	B C 13N
C2051	B C 9O
C2052	A D 9P
C2053	B C 10O
C2054	B C 11O
C2055	A D 11O
C2101	A D 7G
C2201	B C 12K
C2202	B C 12K
C2203	A D 12J
C2204	B C 11J
C2205	A D 12J
C2206	A D 12K
C2207	A D 13K
C2208	A D 13K
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C2221	B C 16L
C2222	A D 16L
C2223	A D 15L
C2224	B C 14M
C2225	A D 16M
C2226	A D 15M
C2227	B C 14M
C2228	B C 14L
C2229	B C 14K
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C3002	B C 6M
C3003	A D 5M
C3004	B C 6L
C3010	A D 2C
C3011	A D 2C
C3012	A D 9F
C3013	B C 9G
C3014	A D 8E
C3016	B C 11E
C3022	B C 19E
C3024	B C 13D
C3025	A D 14D
C3026	B C 14D
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C3032	B C 13E
C3033	B C 12G
C3036	B C 13D
C3037	B C 14D
C3038	B C 14F
C3039	B C 14F
C3040	B C 9D
C3041	B C 13D
C3042	A D 4D
C3043	B C 14F
C3044	B C 14F
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C3046	B C 4I
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C4003	B C 11G
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C4005	B C 10G
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C4009	B C 11G
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C4012	A D 13H
C4013	B C 12G
C4014	B C 12G
C4015	B C 11G
C4016	B C 13G
C5001	A D 1O
C5002	A D 2N
C5003	A D 4P
C5005	A D 1J
C5006	A D 2M
C5101	A D 1N
C5102	A D 1K
C5103	B C 3L
C5104	A D 4M
C5105	A D 3L
C5106	A D 3J
C5107	A D 3K
C5110	A D 2K
C5201	A D 1I
C5202	A D 2H
C5203	A D 2G
C5204	A D 4G
C5205	A D 2H
C5206	A D 3H
C5207	A D 2F
C5208	A D 2F
C5301	A D 2E
C5303	A D 3E
C5304	A D 3E
C5305	B C 1D
C5306	A D 3D
C5307	A D 2D
C5308	A D 3G
C5309	A D 4F
C5310	A D 4E
C6005	A D 21I
C6006	B C 22M
C6007	A D 21M
C6008	B C 22M
C6012	A D 21N
C6013	B C 22P
C6016	B C 22O
C6020	B C 22N
C6021	B C 22N
C6022	B C 22N
C6023	B C 22M
C6032	B C 21I
C6037	A D 21J
C6052	B C 22O
C6053	B C 22P
C6055	B C 22O
C6080	B C 22J
C6081	A D 21I
C7001	A D 11B
C7002	A D 9B
C7007	A D 13B
C7008	B C 13A
C7009	B C 13B
C7010	B C 13B
C7011	A D 7B
C7012	A D 8B
C7013	B C 17B
C7014	B C 17A
C7019	B C 15A
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C7102	B C 14P
C7103	B C 14P
C7104	B C 14P
C7109	B C 17P
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C7111	B C 17P
C7112	B C 18P
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C7119	B C 21P
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C7124	B C 20O
C7125	B C 19O
C7128	A D 20K
C7129	B C 20J
C7130	B C 20L
C7131	B C 20M
C7132	A D 20L
C7133	B C 20L
C7134	B C 20L
C7135	B C 20L
C7136	B C 19L
C7138	B C 20K
C7140	A D 20M
C7141	A D 19M
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C7143	A D 19M
C7144	A D 19K
C7145	A D 18L
C7146	A D 19L
C7164	B C 18A
C7165	B C 18A
C7166	B C 19A
C7167	B C 20A
C7202	A D 21H
CONNECTOR	
CN1	A D 14O
CN2001	A D 9O
CN2002	A D 19L
CN3001	A D 7P
CN3002	A D 7N
CN3003	A D 7L
CN3004	A D 9F
CN3005	A D 9P
CN3006	A D 3D
CN5001	A D 1P
CN6701	A D 22F
CN7001	A D 16A
CN7003	A D 2C
CN7101	A D 20H
CN7102	A D 21G
DIODE	
D6	A D 13H
D201	A D 18G
D202	A D 18G
D203	A D 18G
D2001	A D 16M
D2101	A D 7H
D2201	A D 11I
D3001	A D 12H
D3002	A D 8F
D3003	A D 8E
D3004	A D 5C
D3005	A D 5C
D3006	A D 8H
D3008	A D 10E
D3010	B C 19D
D3011	B C 19D
D4001	A D 13G
D4002	A D 13G
D5001	B C 2M
D5101	A D 1M
D5102	A D 2K
D5103	A D 3K
D5104	A D 3L
D5105	A D 3K
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D5204	A D 2I
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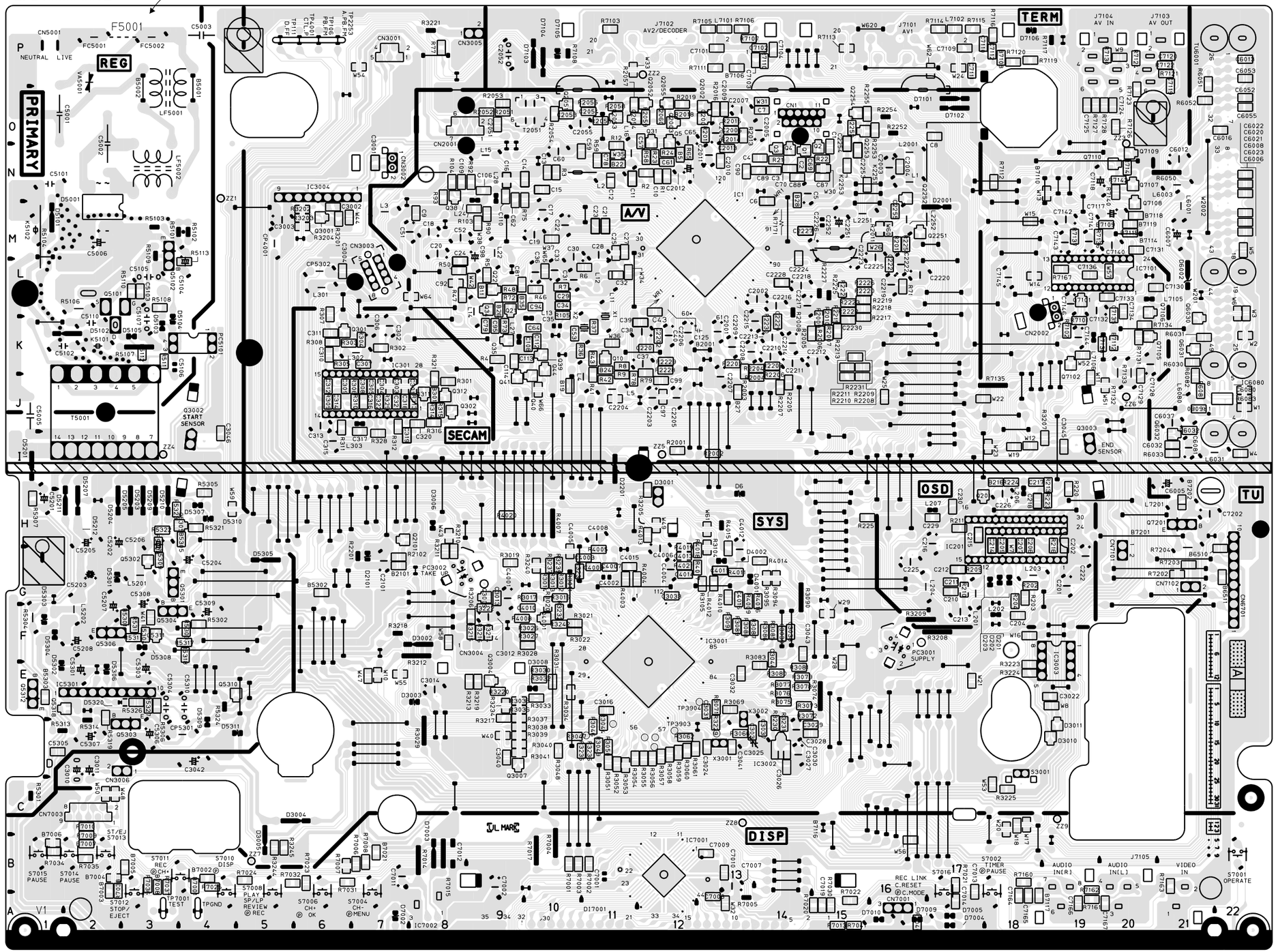
D5209	A D 3I
D5210	A D 3I
D5211	A D 2H
D5212	A D 2I
D5301	A D 2G
D5302	A D 1F
D5303	A D 1F
D5304	A D 1F
D5305	A D 5G
D5306	A D 2F
D5307	A D 4H
D5308	A D 3F
D5309	A D 4D
D5310	A D 4H
D5311	A D 4D
D5320	B C 2E
D6002	A D 21M
D7002	A D 7A
D7003	A D 8B
D7004	A D 17A
D7005	A D 17A
D7009	A D 16A
D7010	A D 16A
D7101	A D 17O
D7102	A D 17O
D7103	A D 10P
D7104	A D 10P
D7105	A D 10P
D7106	A D 18P
IC	
IC1	B C 13M
IC201	A D 19G
IC301	A D 8J
IC3001	B C 12F
IC3002	B C 14D
IC3003	A D 19F
IC3004	A D 7N
IC5301	A D 2E
IC6080	B C 22J
IC7001	B C 12B
IC7002	A D 8A
IC7101	A D 20L
JACK	
J7101	A D 16P
J7102	A D 12P
J7103	A D 21Q
J7104	A D 20Q
J7105	A D 20A
COIL	
L1	A D 16N
L2	A D 11N
L3	A D 7M
L4	A D 11J
L5	A D 11J
L11	A D 11L
L12	A D 11L
L13	A D 10K
L14	A D 9L
L15	A D 9N
L16	A D 11O
L22	A D 9M
L24	A D 9N
L27	A D 9K
L28	A D 9M
L201	A D 17G
L202	A D 18F
L203	A D 19G
L204	A D 16G
L206	A D 18I
L207	A D 17H
L301	A D 6L
L302	A D 6K
L303	A D 6J
L2001	A D 16N
L2251	A D 16M
L2252	A D 16M
L5201	A D 3G
L5202	A D 2G
L6001	A D 21M
L6003	A D 21N
L6031	A D 21I
L6080	A D 21J
L7101	B C 13P
L7102	B C 17P
L7105	A D 21L
L7106	A D 19K
L7201	A D 21H
TRANSISTOR	
Q1	B C 14N
Q2	B C 15N
Q3	B C 14N
Q4	B C 14N
Q5	B C 12O
Q10	B C 11K
Q21	B C 9L
Q22	B C 9L
Q31	B C 12O
Q34	B C 9L
Q35	B C 9K
Q38	B C 8N
Q39	B C 10K
Q40	B C 10J
Q41	B C 9J
Q44	B C 10K
Q201	B C 17H
Q301	B C 6K
Q302	B C 8J
Q311	B C 8J
Q312	B C 8J
Q2001	B C 13O
Q2002	B C 13O
Q2003	B C 12O
Q2051	B C 10O
Q2052	B C 12O
Q2053	B C 11O
Q2054	B C 11O
Q2055	B C 12O
Q2101	B C 7H
Q2251	B C 16M
Q2252	B C 16N
Q2253	B C 15O
Q2254	B C 15O
Q3001	B C 6M
Q3002	A D 4I
Q3003	A D 19I
Q3004	B C 9E
Q3005	B C 9G
Q3007	B C 9D
Q4001	B C 10F
Q5101	A D 2L
Q5102	A D 3M
Q5301	A D 3G
Q5302	B C 3G
Q5303	A D 3D
Q5304	A D 4F
Q5305	B C 4H
Q5306	A D 2F
Q5310	B C 5E
Q5311	B C 3F
Q5312	A D 1E
Q5318	B C 2E
Q6030	B C 21K
Q6031	B C 21K
Q6032	B C 21I
Q7101	B C 19L
Q7102	B C 19K
Q7105	B C 20K
Q7106	B C 20L
Q7107	B C 20N
Q7108	B C 20M
Q7109	B C 20N
Q7110	B C 20N
Q7201	A D 21H
RESISTOR	
R1	B C 12N
R2	B C 12N
R3	B C 10N
R4	B C 9K
R5	B C 9L
R6	B C 11L
R7	B C 10L
R8	B C 11K
R9	B C 11J
R12	B C 11N
R21	B C 14N
R22	B C 15N
R23	B C 12N
R24	B C 12N
R36	B C 10K
R37	B C 11K
R41	B C 11J
R42	B C 11J
R43	B C 11K
R46	B C 10L
R47	B C 8L
R48	B C 9L
R50	B C 8L
R58	B C 12N
R59	B C 11N
R65	B C 12N
R71	B C 16L
R72	B C 9L
R73	B C 9K
R75	B C 10N
R77	B C 8P
R78	B C 11J
R79	B C 12K
R90	B C 9M
R92	B C 9N
R93	B C 8N
R103	B C 9M
R104	B C 8N
R105	B C 10L
R202	B C 18G
R203	B C 18G
R204	B C 18G
R209	B C 17G
R210	B C 17G
R211	B C 17H
R213	B C 19I
R216	B C 19H
R220	B C 19I
R223	B C 19H
R224	B C 18I
R225	B C 15H
R301	B C 8J
R302	B C 7K
R303	B C 6K
R304	B C 7K
R305	B C 6K
R306	B C 7J
R307	B C 6L
R308	B C 6K
R309	B C 6J
R310	B C 7J
R311	B C 6J
R312	B C 7J
R313	B C 8J
R314	B C 8J
R315	B C 8J
R316	B C 8J
R321	B C 8J
R328	B C 7I
R329	B C 7J
R2001	B C 12I
R2002	B C 13I
R2003	B C 13K
R2004	B C 14J
R2005	B C 15K
R2006	B C 15K
R2007	B C 15K
R2008	A D 14K
R2009	B C 15K
R2010	B C 15K
R2011	B C 16M
R2012	B C 16M
R2013	B C 13O
R2014	B C 13O
R2015	B C 13O
R2016	B C 13O
R2017	B C 13O
R2018	B C 12O
R2019	B C 12O
R2051	B C 9O
R2052	B C 9O
R2053	B C 9O
R2054	B C 10O
R2055	B C 11O
R2056	B C 11O
R2057	B C 11O
R2058	B C 11O
R2059	B C 12O
R2060	B C 12O
R2102	B C 7G
R2201	A D 7G
R2202	B C 13K
R2203	B C 14K
R2204	B C 14K
R2205	B C 14J
R2206	B C 14J
R2207	B C 14J
R2208	B C 15J
R2209	B C 15K
R2210	B C 15J
R2211	B C 15K
R2213	B C 15K
R2215	B C 15L
R2217	B C 15K
R2218	B C 15L
R2219	B C 15L
R2220	B C 15L
R2222	B C 15L
R2223	B C 15L
R2224	B C 15L
R2225	A D 15L
R2226	B C 15L
R2227	A D 15L
R2228	B C 12K
R2229	B C 12K
R2230	B C 14K
R2231	B C 15K
R2251	B C 16M
R2252	A D 16O
R2253	B C 16O
R2254	A D 16O
R2255	B C 15O
R3011	B C 10G
R3012	B C 10G
R3013	B C 10G
R3014	B C 10G
R3015	B C 10G
R3017	B C 10G
R3019	B C 9G
R3020	B C 10G
R3021	B C 10F
R3022	B C 10F
R3026	B C 10F
R3027	B C 10F
R3028	B C 10F
R3029	A D 8D
R3030	B C 10E
R3031	B C 10E
R3032	B C 10E
R3033	B C 10E
R3034	B C 10E
R3035	B C 9E
R3036	B C 9E
R3037	B C 9E
R3038	B C 9D
R3039	B C 9D
R3040	B C 9D
R3041	B C 9D
R3044	B C 11D
R3046	B C 11D
R3047	B C 10D
R3048	B C 10D
R3049	B C 11D
R3050	B C 11D
R3051	B C 11D
R3052	B C 11D
R3053	B C 11D
R3054	B C 11D
R3055	B C 12D
R3056	B C 12D
R3057	B C 12D
R3058	B C 12D
R3059	B C 12D
R3060	B C 12D
R3061	B C 12D
R3062	B C 12D
R3066	B C 13D
R3069	B C 13E
R3071	B C 13E
R3072	B C 14E
R3073	B C 14E
R3074	A D 15E
R3075	B C 14E
R3076	B C 14E
R3077	B C 14E
R3078	B C 14E
R3079	B C 14E
R3080	B C 14E
R3081	B C 14E
R3083	B C 14E
R3085	B C 14F
R3086	B C 14F
R3087	B C 14F
R3088	B C 13F
R3089	B C 13F
R3090	A D 14F
R3093	B C 13F
R3094	B C 14G
R3095	B C 14G
R3104	B C 13G
R3105	B C 13G
R3201	B C 6M
R3202	B C 6M
R3203	B C 6M
R3204	B C 6M
R3205	B C 12H
R3206	B C 9F
R3207	B C 19I
R3208	A D 17F
R3209	A D 17F
R3210	B C 8G
R3211	B C 8G
R3212	A D 8F
R3213	B C 9E
R3214	B C 9F
R3215	B C 9F
R3216	B C 9F
R3217	B C 9E
R3218	A D 7F
R3219	B C 9E
R3220	B C 9E
R3221	A D 8P
R3222	B C 9F
R3223	B C 18E
R3224	B C 18E
R3225	B C 18C
R3229	B C 13D
R3230	B C 14D
R3231	B C 14D
R3232	B C 10F
R3234	B C 9E
R3235	B C 11D
R3236	B C 11D
R3237	B C 10G
R3238	B C 10G
R3239	B C 10G
R3240	B C 10G
R3242	B C 10F
R3244	B C 5B
R3245	B C 5B
R4001	A D 13H
R4003	B C 11G
R4004	B C 11G
R4005	B C 11G
R4007	A D 10H
R4008	B C 9F
R4009	B C 13G
R4010	B C 13G
R4011	B C 13G
R4012	B C 13G
R4013	B C 12H
R4014	B C 14G
R4015	B C 13G
R4016	B C 14G
R4017	B C 13G
R4018	B C 13G
R4019	B C 12G
R4020	B C 9H
R4021	B C 12G
R5101	A D 4M
R5102	A D 4M
R5103	A D 3M
R5104	A D 1N
R5106	A D 2L
R5107	A D 3K
R5108	B C 3L
R5109	A D 3L
R5110	B C 3L
R5111	B C 3K
R5112	B C 3K
R5113	B C 4L
R5301	A D 1C
R5302	B C 4F
R5303	B C 4F
R5304	A D 1F
R5305	B C 4H
R5306	B C 3E
R5307	B C 1H
R5308	B C 3H
R5309	B C 3G
R5310	B C 3F
R5311	B C 3F
R5313	A D 1D
R5314	A D 2D
R5317	B C 4F
R5318	B C 4F
R5319	B C 2E
R5321	B C 4H
R5322	B C 3H
R5323	B C 3H
R5324	A D 4E
R5326	B C 3E
R5327	B C 3E
R6030	B C 21K
R6031	B C 21K
R6032	B C 21K
R6033	B C 21I
R6050	A D 21N
R6051	B C 21P
R6052	B C 21O
R6080	B C 21J
R6081	B C 21J
R6082	B C 21J
R6083	B C 22J
R7001	B C 10B
R7002	B C 11B
R7003	B C 10B
R7004	A D 10B
R7005	A D 14A
R7006	B C 6B
R7007	B C 7B
R7008	B C 7B
R7009	B C 2B
R7010	B C 2C
R7013	B C 15A
R7014	A D 8B
R7015	A D 8B
R7017	A D 10B
R7020	B C 15A
R7021	B C 17B
R7022	B C 15A
R7023	B C 6B
R7024	B C 5B
R7025	B C 4B
R7030	B C 15A
R7031	B C 6B
R7032	B C 5B
R7033	B C 2B
R7034	B C 1B
R7035	B C 2B
R7036	B C 3B
R7037	B C 3B
R7040	B C 16A
R7041	B C 15A
R7101	B C 19K
R7102	B C 19K
R7103	B C 11P
R7105	B C 13P
R7106	B C 13P
R7107	B C 13P
R7108	A D 10P
R7110	B C 14P
R7111	B C 13P
R7112	B C 18N
R7113	B C 15P
R7114	B C 17P
R7115	B C 17P
R7116	B C 18P
R7117	A D 19P
R7119	B C 18P
R7120	B C 18P
R7121	B C 21P
R7122	B C 21P
R7123	B C 20O
R7124	B C 20P
R7126	B C 20O
R7127	B C 19O
R7128	B C 20O
R7130	B C 20P
R7131	B C 20K
R7132	A D 20J
R7133	A D 20J
R7134	B C 20K
R7135	A D 18J
R7136	B C 19M
R7137	B C 19M
R7140	B C 20N
R7141	B C 20N
R7142	B C 20N
R7160	B C 18B
R7161	B C 19A
R7162	B C 19B
R7163	B C 21B
R7167	B C 19L
R7171	A D 14M
R7202	B C 21G
R7203	B C 21G
R7204	A D 21G
SWITCH	
S3001	A D 18C
S7001	A D 22B
S7002	A D 18B
S7004	A D 7B
S7006	A D 6B
S7008	A D 5B
S7010	A D 4B
S7011	A D 4B
S7012	A D 3B
S7013	A D 2B
S7014	A D 2B
S7015	A D 1B
S7016	A D 17B
TESTPOINT	
TP106	A D 6P
TP111	A D 5P
TP2253	A D 6P
TP3901	B C 11D
TP3902	B C 11D
TP3903	B C 12D
TP3904	B C 13E
TP3905	B C 13D
TP3906	B C 12D
TP3907	B C 12D
TP3908	B C 12D
TP4001	A D 6P
TP7001	A D 3A
TPGND	A D 4A
OTHER	
CP4001	A D 5M
CP5301	A D 4D
CP5302	A D 6L
DI7001	A D 12A
F5001	A D 2P
FC5001	A D 2P
FC5002	A D 3P
K2251	B C 15N
K2252	B C 15O
K2253	B C 15N
K5101	A D 2K
K5102	A D 1M
LF5001	A D 3O
LF5002	A D 3N
PC01636	A D 3I
PC02129	A D 2G
PC3001	A D 16F
PC3002	A D 8G
PC5101	A D 4K
T2051	A D 9O
T5001	A D 1K
TU6001	A D 22P
VA5001	A D 2O
WR1	A D 12L
X1	A D 11K
X2	A D 11K
X3001	A D 13D
X3002	A D 13E

4.19 MAIN, A/C HEAD, MINI OPE, R.PAUSE, LITHIUM BATTERY AND LOADING MOTOR CIRCUIT BOARDS [HR-J677MS, HR-J777MS]

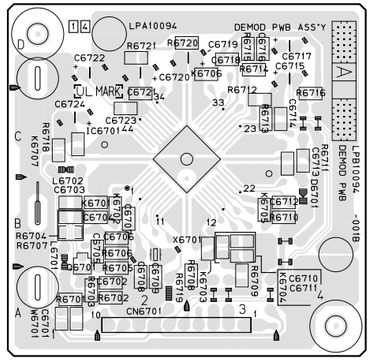
<03>MAIN
LPB10086-001E

DANGEROUS VOLTAGE



4.20 DEMODULATOR CIRCUIT BOARD [HR-J777MS]

<14>DEMOD
LPB10094-001B



COMPONENT PARTS LOCATION GUIDE
< DEMODULATOR > [HR-J777MS]

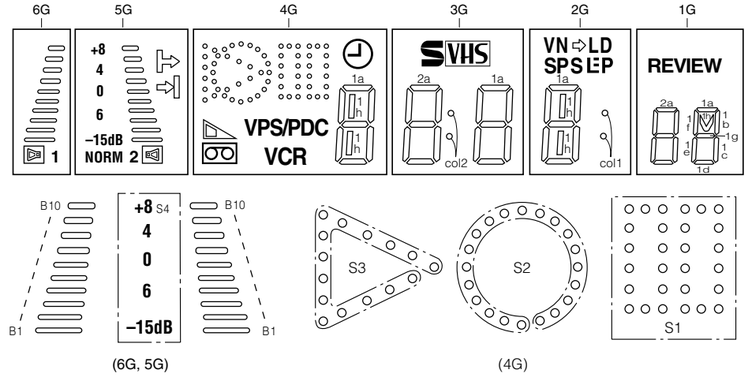
REF.NO.	LOCATION		
CAPACITOR			
C6701	B	C	1A
C6702	B	C	2A
C6703	B	C	1B
C6704	B	C	1B
C6705	B	C	2B
C6706	B	C	2B
C6707	B	C	2B
C6708	B	C	2A
C6709	B	C	2A
C6710	B	C	3B
C6711	B	C	3B
C6712	B	C	4B
C6713	B	C	4C
C6714	B	C	4C
C6715	A	D	4D
C6716	B	C	3D
C6717	A	D	4D
C6718	B	C	3D
C6719	A	D	3D
C6720	A	D	2D
C6721	B	C	2C
C6722	A	D	1D
C6723	B	C	2C
C6724	A	D	1C

REF.NO.	LOCATION		
CONNECTOR			
CN6701	A	D	3A
DIODE			
D6701	A	D	4B
IC			
IC6701	B	C	3C
COIL			
L6701	A	D	1A
L6702	A	D	1C
TRANSISTOR			
Q6701	B	C	1B
RESISTOR			
R6701	B	C	1A
R6702	B	C	2A
R6703	B	C	1A
R6704	B	C	1B
R6705	B	C	2A
R6706	B	C	2B
R6707	B	C	1B
R6708	B	C	3A
R6709	B	C	3A
R6710	B	C	4B

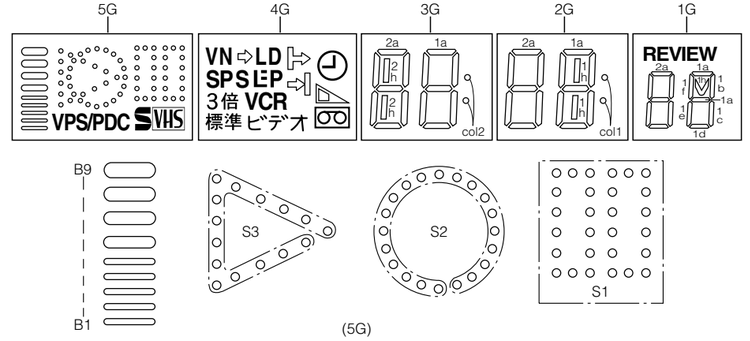
REF.NO.	LOCATION		
R6711	B	C	4C
R6712	B	C	3C
R6713	B	C	3C
R6714	B	C	3D
R6715	B	C	3D
R6716	B	C	4C
R6718	B	C	1C
R6719	A	D	2A
R6720	B	C	3D
R6721	B	C	2D
OTHER			
K6701	B	C	1B
K6702	B	C	2B
K6703	B	C	3B
K6704	B	C	3B
K6705	B	C	3B
K6706	B	C	3D
K6707	B	C	1C
X6701	A	D	2B

4.21 FDP GRID ASSIGNMENT AND CONNECTION

[A] (FDP with audio level indicator)



[B] (FDP without audio level indicator)



ANODE CONNECTION
[A]

	6G	5G	4G	3G	2G	1G
P 1	—	⇨	S2	1a	1a	1a
P 2	—	⇨|	S1	1b	1b	1b
P 3	—	S4	S3	1f	1f	1f
P 4	—	NORM	VPS/PDC	1g	1g	1g
P 5	1	2	◔	1c	1c	1c
P 6	▷	◁	◺	1e	1e	1e
P 7	B10	B10	⚮	1d	1d	1d
P 8	B9	B9	VCR	col2	1h	1h
P 9	B8	B8	1a	2a	col1	2a
P10	B7	B7	1b	2b	⇨	2b
P11	B6	B6	1f	2f	VN	2f
P12	B5	B5	1g	2g	LD	2g
P13	B4	B4	1c	2c	SP	2c
P14	B3	B3	1e	2e	S (SEP)	2e
P15	B2	B2	1d	2d	: (SEP)	2d
P16	B1	B1	1h	SVHS	LP (SEP)	REVIEW

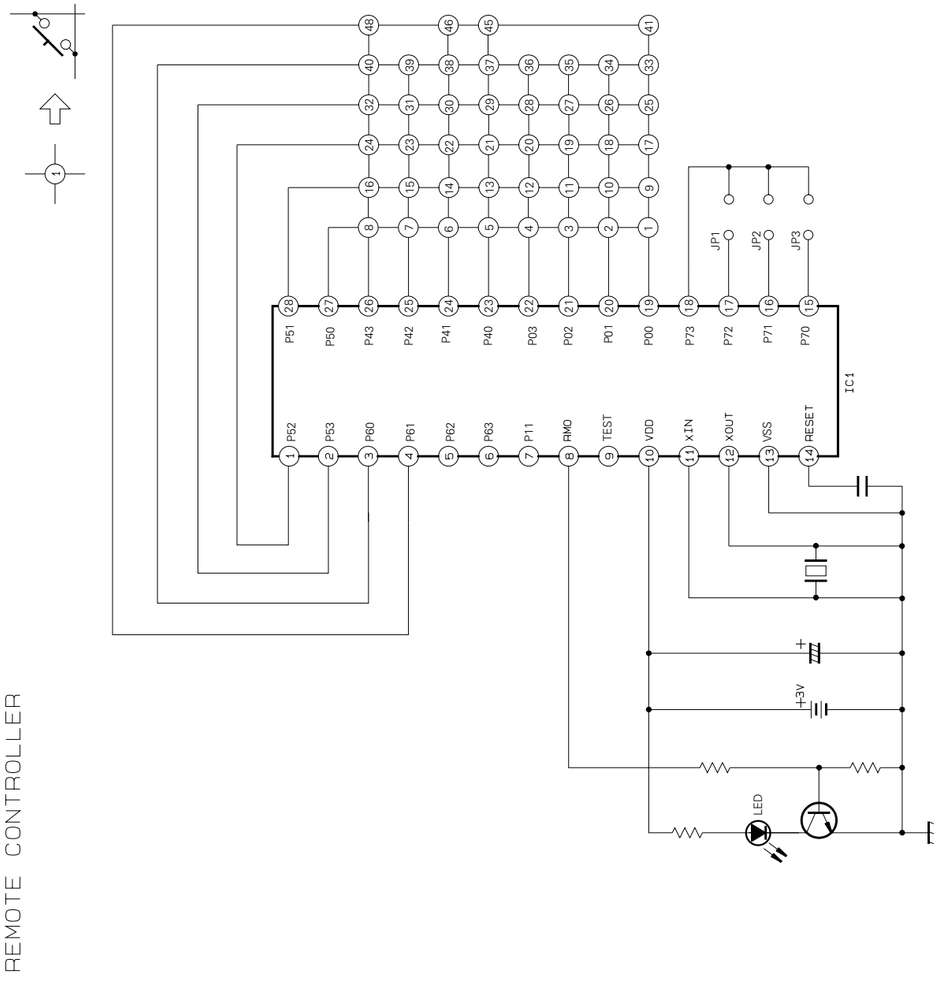
ANODE CONNECTION
[B]

	5G	4G	3G	2G	1G
P 1	S2	⇨	1a	1a	1a
P 2	S1	⇨|	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	SVHS	◔	1c	1c	1c
P 6	—	◺	1e	1e	1e
P 7	—	⚮	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	⇨	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S (SEP)	2e	2e	2e
P15	B2	: (SEP)	2d	2d	2d
P16	B1	LP (SEP)	2h	col1	REVIEW

4.22 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

Key No.	Key Name
1	START+
2	1
3	4
4	STOP+
5	DATE+
6	CH+
7	3
8	6
9	CANCEL(1-)
10	2
11	7
12	0
13	8
14	TIMER(2-)
15	5
16	9
17	PROG
18	TV
19	VCR
20	PROG CHEK
21	-/--
22	SKIP
23	OPERATE
24	CABLE/SAT
25	START-
26	TV/VCR
27	RE-VIEW
28	STOP-
29	DATE-
30	CH-
31	DISPLAY -:---
32	AUDIO/MUTE
33	MENU
34	REC
35	REW
36	PLAY
37	STOP
38	FF
39	PAUSE
40	OK/ENTER
41	</TV VOL-
45	◀ /TV CH+
46	▶ /TV CH-
48	>>/TV VOL+
34+36	REC+PLAY
34+39	REC+PAUSE



4.23 VOLTAGE CHARTS [HR-J271MS, HR-J471MS]

<VIDEO/AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	1.4	2.1
2	2.9	2.9
3	2.5	2.5
4	1.9	1.4
5	1.9	1.5
6	2.4	2.1
7	1.5	0.8
8	0	0
9	2.6	3.0
10	2.7	2.4
11	3.0	3.0
12	2.8	2.5
13	3.0	3.1
14	2.3	2.3
15	0	0
16	2.8	2.8
17	1.5	1.5
18	2.8	2.8
19	0	2.8
20	2.8	2.8
21	2.0	2.0
22	2.8	2.8
23	2.8	2.8
24	5.0	5.0
25	0.4	0.4
26	0	0
27	2.3	2.1
28	2.3	2.3
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.7	2.7
33	5.0	5.0
34	2.7	2.2
35	5.0	5.0
36	2.7	2.7
37	2.3	2.3
38	-	-
39	1.2	1.2
40	-	-
41	2.5	2.5
42	-	-
43	0	0
44	2.2	2.2
45	4.4	4.6
46	4.9	4.5
47	2.7	2.7
48	2.5	2.5
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	0	0
53	2.5	2.5
54	0	0
55	0	0
56	0	0
57	0	0
58	0	0
59	0	0
60	0	0
61	0	0
62	0	0
63	0	0
64	0	0
65	2.1	2.1
66	0	0
67	0	0
68	0	0
69	0	0
70	0	0
71	0	0
72	0	0
73	3.0	3.0
74	0	0
75	0	0
76	0	0
77	0	0
78	0	0
79	5.0	5.0
80	5.0	5.0
81	0	0
82	0	0
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.3	2.3
87	5.0	5.0
88	0	0
89	0	0
90	0	0
91	0	4.0
92	2.6	2.6
93	0.9	0.9
94	0	0
95	2.5	2.5
96	2.5	2.5
97	2.5	2.5
98	0	0
99	2.5	2.5
100	0	0

MODE PIN NO.	REC	PLAY
Q12		
E	-	-
C	-	-
B	-	-
Q22		
E	1.7	1.7
C	5.0	5.0
B	2.3	2.3
Q38		
E	3.1	3.1
C	5.0	5.0
B	3.7	3.7
Q39		
E	0	0
C	0	0
B	0	0
Q40		
E	0	0
C	0	0
B	0	0
Q41		
E	0	0
C	0	0
B	0	0
Q42		
E	0	0
C	0	0
B	5.0	5.0
Q2001		
E	-9.7	0
C	0	0
B	-16.5	0.7
Q2002		
E	-9.7	0
C	0	0
B	-16.2	0.7
Q2003		
E	5.0	5.0
C	-16.3	4.9
B	4.9	0
Q2051		
E	0	0
C	7.5	0.3
B	0.5	0.3
Q2052		
E	10.8	10.9
C	10.7	0.4
B	10.1	10.9
Q2053		
E	0	0
C	0	10.8
B	4.9	0
Q2054		
E	10.7	0.4
C	10.5	0.2
B	9.9	0.4
Q2055		
E	0	0
C	0	0.5
B	4.9	0
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.3	2.3
6	2.3	2.3
7	2.3	2.3
8	2.3	2.3
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.2	2.3
7	2.4	2.3
CN2002		
1	0	0
2	0	0

<SYSTEM CONTROL>

MODE PIN NO.	REC	PLAY
IC3001		
1	-	-
2	-	-
3	0	0
4	0	0
5	4.9	4.9
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	5.0
13	0	0
14	0	0
15	4.9	4.9
16	4.8	4.8

MODE PIN NO.	REC	PLAY
17	4.7	4.7
18	4.6	4.6
19	0	0
20	0	0
21	0	2.8
22	4.9	4.9
23	2.4	2.4
24	0	0
25	-	-
26	0	0
27	5.0	0
28	0	0
29	0	0
30	0	4.9
31	4.9	4.9
32	0	0
33	2.6	2.6
34	1.1	1.3
35	0	0
36	4.9	4.9
37	-	-
38	-	-
39	0	0
40	-	-
41	-	-
42	4.9	4.9
43	5.0	5.0
44	0	0
45	5.0	5.0
46	5.0	5.0
47	1.6	1.6
48	0	0
49	1.6	1.6
50	2.4	2.4
51	5.0	5.0
52	2.4	2.4
53	2.5	2.5
54	0	0
55	0	0
56	4.9	4.9
57	4.9	4.9
58	0	0
59	0	0
60	0	0
61	0	0
62	4.9	4.9
63	4.9	4.9
64	0	0
65	2.6	2.6
66	0.4	0.4
67	2.3	2.3
68	2.3	2.3
69	2.3	2.3
70	2.3	2.3
71	0	0
72	2.3	2.3
73	4.8	4.8
74	2.8	2.3
75	1.9	2.3
76	2.3	2.3
77	0	0
78	0	0
79	4.4	4.4
80	0	0
81	4.9	4.9
82	0	0
83	0	4.0
84	0	0
85	4.6	4.9
86	4.1	4.1
87	0	0
88	0	0
89	0	0
90	0	0
91	0	0
92	4.9	0
93	0	0
94	4.3	4.3
95	-	-
96	-	-
97	-	-
98	4.8	4.8
99	0	0
100	0	0
IC3002		
1	11.4	11.4
2	0	0
3	0	0
4	0	0.2
5	11.6	11.6
6	11.6	11.6
7	0	0
8	0	0
9	0	0
IC3003		
1	4.9	4.9
2	4.9	4.9
3	0	0
IC3004		
1	0	0
2	0	0

MODE PIN NO.	REC	PLAY
3	0	0
4	0	0
5	4.8	4.8
6	4.8	4.8
7	0	0
8	4.9	4.9
Q202		
E	-	-
C	-	-
B	-	-
Q3001		
E	0	0
C	4.4	4.4
Q3002		
E	0	0
C	4.7	4.9
Q3003		
E	0	0
C	11.4	11.4
B	0.6	0.6
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q4001		
E	0	0
C	0	0
B	4.4	4.4
Q4002		
E	4.8	4.8
C	5.8	5.8
B	5.5	5.5
CN3001		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	-	-
8	11.7	11.7
CN3002		
1	11.7	11.7
2	0	0
3	1.4	1.4
4	0.4	0.4
5	2.6	2.6
CN3003		
1	0.2	0.2
2	0.3	0.3
CN3004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
CN3007		
1	-	-
2	0	0

<SW.REG>

MODE PIN NO.	REC	PLAY
IC5301		
1	5.7	5.7
2	5.1	5.1
3	4.6	4.6
4	0	0
5	11.5	11.5
6	10.9	10.9
7	11.6	11.6
8	5.7	5.7
9	1.3	1.3
10	4.4	4.4
Q5101		
D	133.5	131.4
S	-	-
G	-	-
Q5102		
E	0	0
C	-	-
B	-	-
Q5301 [HR-J471MS]		
E	21.3	22.6
C	10.9	10.9
B	21.2	22.4
Q5302 [HR-J471MS]		
E	0	0
C	21.2	22.4
B	0	0
Q5303		
E	4.9	4.9
C	5.7	5.7
B	5.6	5.6

<TUNER>

MODE PIN NO.	REC	PLAY
IC7001		
Q6030		
E	-	-
C	0	0
B	-	-
Q6501		
E	0	0
C	-	-
B	-	-

<LITHIUM BATTERY>

MODE PIN NO.	REC	PLAY
FW7106		
1	-	-
2	0	0

<DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	4.9	4.9
2	2.1	2.1
3	0	0
4	2.1	2.1
5	4.9	4.9
6	0	0
7	0	0
8	0	0
9	0	0
10	4.9	4.9
11	4.9	4.9
12	-	-
13	4.3	-
14	4.9	4.9
15	-	-
16	-27.3	-27.3
17	-27.3	-27.3
18	-27.1	-27.1
19	-27.1	-27.1
20	-27.1	-27.1
21	-23.0	-23.0
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	4.9	4.9
IC7002		
1	5.1	5.1
2	5.1	5.1
3	0	0
CN7001		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	0	0
8	5.0	5.0
9	5.0	5.0

<TERMINAL>

MODE PIN NO.	REC	PLAY
Q901		
E	2.4	2.4
C	0	0
B	1.7	1.7

<MINI FRONT>

MODE PIN NO.	REC	PLAY
CN7002		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-

4.24 VOLTAGE CHARTS [HR-J677MS, HR-J777MS]

<VIDEO/AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	1.4	2.1
2	2.9	2.9
3	2.5	2.5
4	1.9	1.4
5	1.9	1.5
6	2.4	2.1
7	1.5	0.8
8	0	0
9	2.6	3.0
10	2.5	2.5
11	3.0	3.0
12	2.8	2.5
13	3.0	3.0
14	2.3	2.3
15	0	0
16	2.8	2.8
17	1.5	1.5
18	2.8	2.8
19	0	2.6
20	2.8	2.8
21	2.0	2.0
22	2.8	2.8
23	2.8	2.8
24	5.0	5.0
25	0.4	0.4
26	0	0
27	2.3	2.3
28	2.3	2.3
29	1.9	1.9
30	2.1	2.1
31	0	0
32	2.7	2.7
33	5.0	5.0
34	2.7	2.2
35	5.0	5.0
36	2.7	2.7
37	2.3	2.3
38	-	-
39	1.2	1.2
40	-	-
41	2.5	2.5
42	-	-
43	0	0
44	2.2	2.2
45	4.8	4.8
46	4.2	4.2
47	2.7	2.7
48	2.5	2.5
49	5.0	5.0
50	2.5	2.5
51	2.8	2.8
52	2.3	2.3
53	2.3	2.3
54	2.4	2.4
55	2.1	2.1
56	0.5	0.5
57	2.3	2.3
58	8.2	8.2
59	4.8	4.8
60	4.2	4.2
61	4.1	4.1
62	4.1	4.1
63	2.3	2.3
64	2.3	2.3
65	1.5	1.5
66	3.0	3.0
67	4.2	4.2
68	4.2	4.2
69	2.3	2.3
70	0	0
71	0.3	0.3
72	0.2	0.2
73	0.2	0.2
74	2.3	2.3
75	2.5	2.5
76	0	0
77	2.5	2.5
78	0.3	0.3
79	0.2	0.2
80	0.2	0.2
81	2.3	2.3
82	0.7	0.7
83	0	0
84	2.3	2.3
85	2.3	2.3
86	2.2	2.2
87	1.6	1.8
88	2.3	2.3
89	2.3	2.3
90	2.3	2.3
91	0	0
92	0	0
93	0	2.4
94	0	1.5
95	0	0
96	2.4	2.4
97	2.7	2.3
98	2.5	2.3
99	4.9	4.9
100	5.0	5.0
101	0	0
102	0	0
103	0	0
104	2.3	2.3
105	2.3	2.3
106	2.3	2.3
107	4.9	4.9
108	0	0
109	0	0
110	0	0
111	0	1.6
112	2.5	2.5
113	0.5	1.0
114	0	0
115	2.5	2.5
116	2.5	2.5
117	2.5	2.5
118	0	0
119	2.5	2.5
120	4.6	4.6
Q1		
E	2.4	2.4
C	2.4	2.4
B	0	0
Q2		
E	2.4	2.4
C	2.4	2.4
B	0	0
Q3		
E	0	0
C	0	0
B	0.7	0.7
Q4		
E	0	0
C	0	0
B	0.7	0.7
Q22		
E	1.7	1.7
C	5.0	5.0
B	2.3	2.3
Q38		
E	2.3	2.3
C	5.0	5.0
B	3.0	3.0
Q39		
E	0	0
C	0	0
B	0	0
Q40		
E	0	0
C	0	0
B	0	0
Q41		
E	0	0
C	0	0
B	0	0
Q2001		
E	-10.8	0
C	0	0
B	-17.3	0.7
Q2002		
E	-10.8	0
C	0	0
B	-17.0	0.7
Q2003		
E	5.0	5.0
C	-17.0	4.9
B	4.9	0
Q2051		
E	0	0
C	7.0	0.3
B	0.5	0.3
Q2052		
E	10.5	10.6
C	10.3	0.4
B	9.8	10.6
Q2053		
E	0	0
C	0	10.6
B	4.9	0
Q2054		
E	10.4	0.4
C	10.2	0.2
B	9.6	0.4
Q2055		
E	0	0
C	0	0.5
B	4.9	0
Q2251		
E	4.9	4.9
C	1.6	1.8
B	4.9	4.9
Q2252		
E	0	0
C	0	0
B	4.8	4.8
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.4	2.3
6	2.4	2.3
7	2.4	2.3
8	2.4	2.3
9	2.7	2.3
10	2.7	2.3
11	2.7	2.3
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	2.2	2.4
7	2.4	2.4
CN2002		
1	0	0
2	0	0

<ON SCREEN>

MODE PIN NO.	REC	PLAY
IC201		
1	0	0
2	2.6	2.6
3	5.0	5.0
4	0	0
5	0	0
6	2.4	2.4
7	2.4	2.4
8	5.0	5.0
9	3.3	3.3
10	4.3	4.3
11	1.7	1.7
12	5.0	5.0
13	2.3	2.3
14	0	0
15	2.3	2.3
16	0.3	0.3
17	5.0	5.0
18	2.8	2.8
19	0	0
20	5.0	5.0
21	5.0	5.0
22	3.6	3.6
23	5.0	5.0
24	5.0	5.0
Q201		
E	2.3	2.3
C	0	0
B	1.6	1.6

<SYSTEM CONTROL>

MODE PIN NO.	REC	PLAY
IC3001		
1	2.7	2.4
2	0	0
3	1.8	2.4
4	2.4	2.4
5	2.4	2.4
6	2.5	2.5
7	2.4	2.4
8	2.4	2.4
9	4.8	4.8
10	4.9	4.9
11	0.4	0.4
12	0.4	0.4
13	0	0
14	0	1.4
15	4.9	4.9
16	0	0
17	4.3	4.1
18	0	0
19	0	0
20	0	1.7
21	4.1	4.1
22	4.4	4.4
23	0	0
24	4.8	4.8
25	4.9	4.9
26	4.9	4.9
27	4.9	4.9
28	0	0
29	4.9	4.9
30	4.3	4.3
31	4.9	4.9
32	0	0
33	0	0
34	4.3	4.3
35	0	0
36	0	0
37	0	0
38	4.8	4.8
39	4.8	4.8
40	0	0
41	2.7	2.7
42	0	0
43	0	0
44	0	0
45	4.9	4.9
46	0.5	0.5
47	0.5	0.5
48	4.9	4.9
49	4.2	4.2
50	4.8	4.8
51	4.9	4.9
52	-	1.0
53	4.3	4.3
54	-	-
55	3.1	3.1
56	0	0
57	0	0
58	3.1	3.1
59	-	-
60	0	0
61	0	0
62	0	0
63	0	0
64	-	-
65	-	-
66	-	-
67	-	-
68	0	0
69	-	-
70	4.8	4.8
71	4.8	4.8
72	4.8	4.8
73	4.8	4.8
74	0	0
75	4.5	4.5
76	4.5	4.5
77	5.0	5.0
78	3.1	3.1
79	0	4.8
80	0	0
81	0	0
82	4.9	4.9
83	0	0
84	0	0
85	0	0
86	4.3	4.3
87	4.9	4.9
88	0	0
89	4.8	4.8
90	0	0
91	0	0
92	0	0
93	4.9	4.9
94	0	0
95	0	0
96	0	0
97	0	0
98	0.3	0.3
99	0	-
100	-	-
101	2.5	2.5
102	1.2	1.2
103	0	0
104	4.8	0
105	4.9	0
106	0	0
107	0	0
108	1.5	1.5
109	4.9	4.9
110	0	0
111	0	0
112	2.4	2.4
IC3002		
1	4.9	4.9
2	4.9	4.9
3	0	0
IC3003		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.5	4.5
6	4.5	4.5
7	0	0
8	4.9	4.9
IC3004		
1	11.9	11.9
2	0.4	0.4
3	0	0
4	0.3	0.3
5	11.9	11.9
6	11.9	11.9
7	0	0
8	0	0
9	0	0
Q3001		
E	0	0
C	11.9	11.9
B	0	0
Q3002		
E	0	0
C	4.1	4.1
Q3003		
E	0	0
C	4.7	4.7
Q3004		
E	0	0
C	0	0
B	0.7	0.7
Q3005		
E	4.8	4.8
C	5.6	5.6
B	5.4	5.4
Q4001		
E	0	0
C	0	0
B	4.8	4.8
CN3001		
1	11.2	11.2
2	0	0
3	1.4	1.4
4	0	0
5	1.5	1.5
CN3002		
1	0.4	0.4
2	0.4	0.4
CN3003		
1	0	0
2	2.5	2.5
3	2.5	2.5
4	5.0	5.0
5	0	0
6	4.9	4.9
7	-	-
8	11.9	11.9
CN3004		
1	4.9	4.9
2	4.9	4.9
3	0	0
4	0	0
CN3005		
1	-	-
2	0	0

<SW.REG>

MODE PIN NO.	REC	PLAY
IC5301		
1	5.7	5.7
2	5.1	5.1
3	4.8	4.8
4	0	0
5	11.2	11.2
6	10.6	10.6
7	11.9	11.9
8	5.7	5.7
9	1.3	1.3
10	4.2	4.2
Q5101		
D	133.5	131.4
S	-	-
G	-	-
Q5102		
E	0	0
C	-	-
B	-	-
Q5303		
E	4.9	4.9
C	5.6	5.6
B	5.5	5.5

<TUNER>

MODE PIN NO.	REC	PLAY
Q6030		
E	0.7	0.7
C	0	0
B	0	0
Q6032		
E	0	0
C	0	0
B	4.4	4.4
CN6701 [HR-J777MS]		
1	0	0
2	4.6	4.6
3	4.5	4.5
4	-	-
5	0.3	0.3
6	0.3	0.3
7	4.9	4.9
8	0	0
9	0	0
10	2.4	2.4

<DISPLAY>

MODE PIN NO.	REC	PLAY
IC7001		
1	4.9	4.9
2	2.1	2.1
3	0	0
4	2.1	2.1
5	4.9	4.9
6	4.9	4.9
7	4.9	4.9
8	4.9	4.9
9	4.9	4.9
10	4.9	4.9
11	4.9	4.9
12	4.3	4.3
13	-	1.0
14	4.9	4.9
15	4.3	4.3
16	-26.1	-26.1
17	-26.1	-26.1
18	-25.9	-25.9
19	-25.9	-25.9
20	-25.9	-25.9
21	-22.0	-22.0
22	-	-
23	-	-
24	-	-
25	-	-
26	-	-
27	-	-
28	-	-
29	-	-
30	-	-
31	-	-
32	-	-
33	-	-
34	-	-
35	-	-
36	-	-
37	-	-
38	-	-
39	-	-
40	-	-
41	-	-
42	-	-
43	-	-
44	4.9	4.9
IC7002		
1	4.9	4.9
2	4.9	4.9
3	0	0
CN7003		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	0	0
8	5.0	5.0
9	5.0	5.0

<TERMINAL>

MODE PIN NO.	REC	PLAY
Q7105		
E	3.0	3.0
C	0	0
B	2.3	2.3
CN7102		
1	-	-
2	0	0

<DEMODULATOR> [HR-J777MS]

MODE PIN NO.	REC	PLAY
IC6701	-	-
Q6701		
E	2.2	2.2
C	4.9	4.9
B	2.9	2.9
CN6701		
1	0	0
2	4.6	4.6
3	4.5	4.5
4	-	-
5	0.3	0.3
6	0.3	0.3
7	4.9	4.9
8	0	0
9	0	0
10	2.4	2.4

<MINI OPE>

MODE PIN NO.	REC	PLAY
CN7005		
1	5.0	5.0
2	5.0	5.0
3	0	0
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-

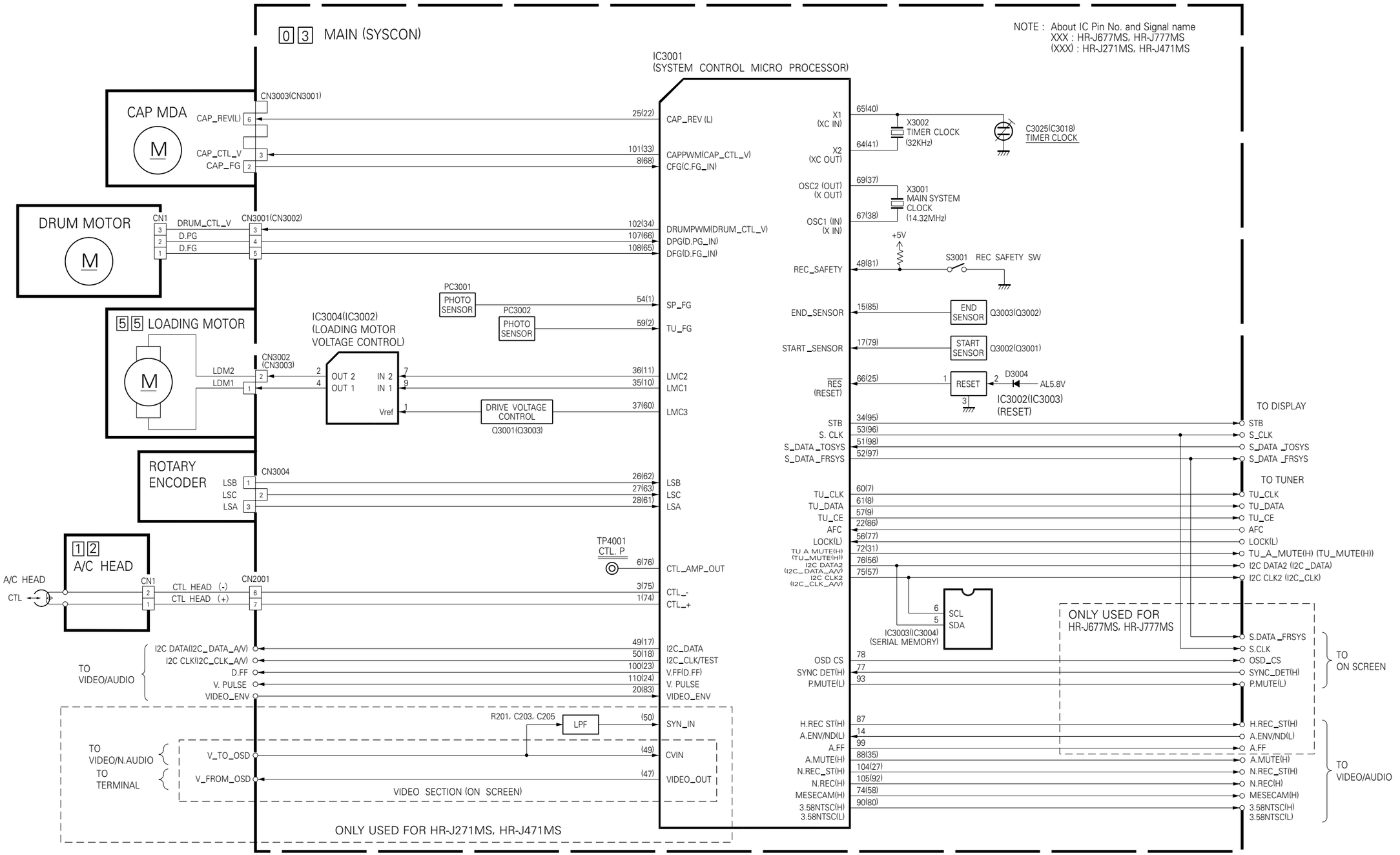
<R.PAUSE>

MODE PIN NO.	REC	PLAY
CN7104		
1	-	-
2	0	0

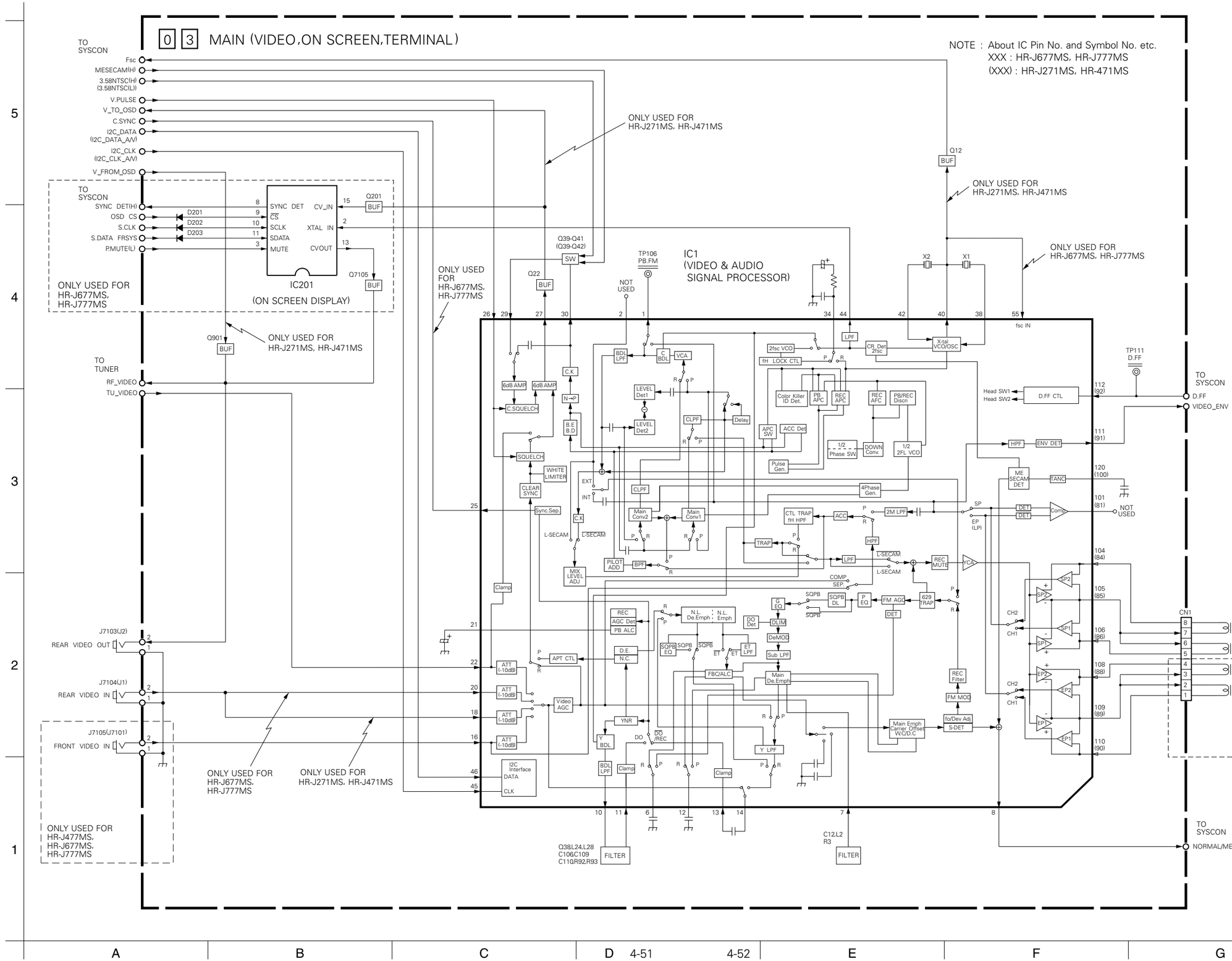
<LITHIUM BATTERY>

MODE PIN NO.	REC	PLAY
FW7006		
1	-	-
2	0	0

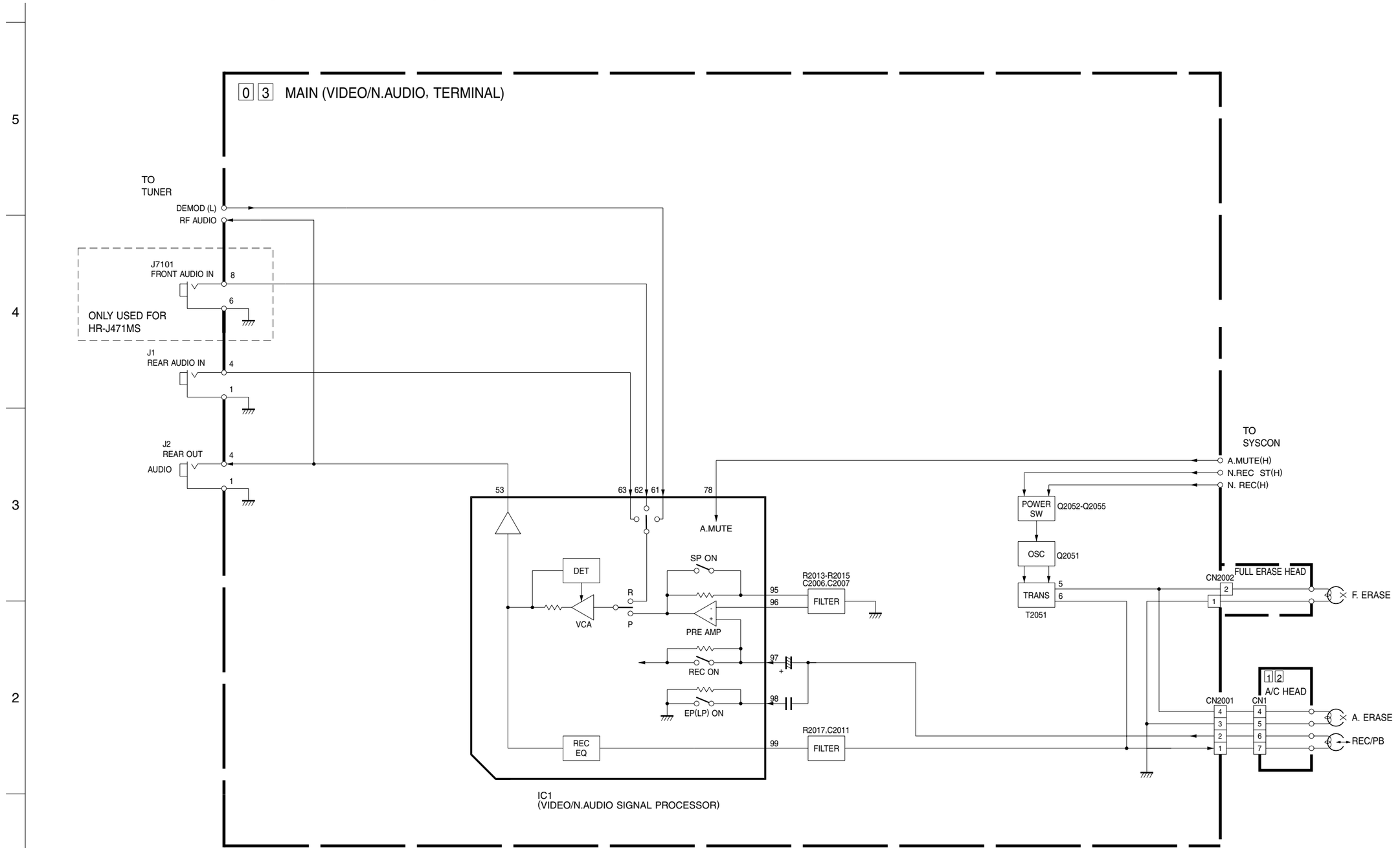
4.25 SYSTEM CONTROL BLOCK DIAGRAM



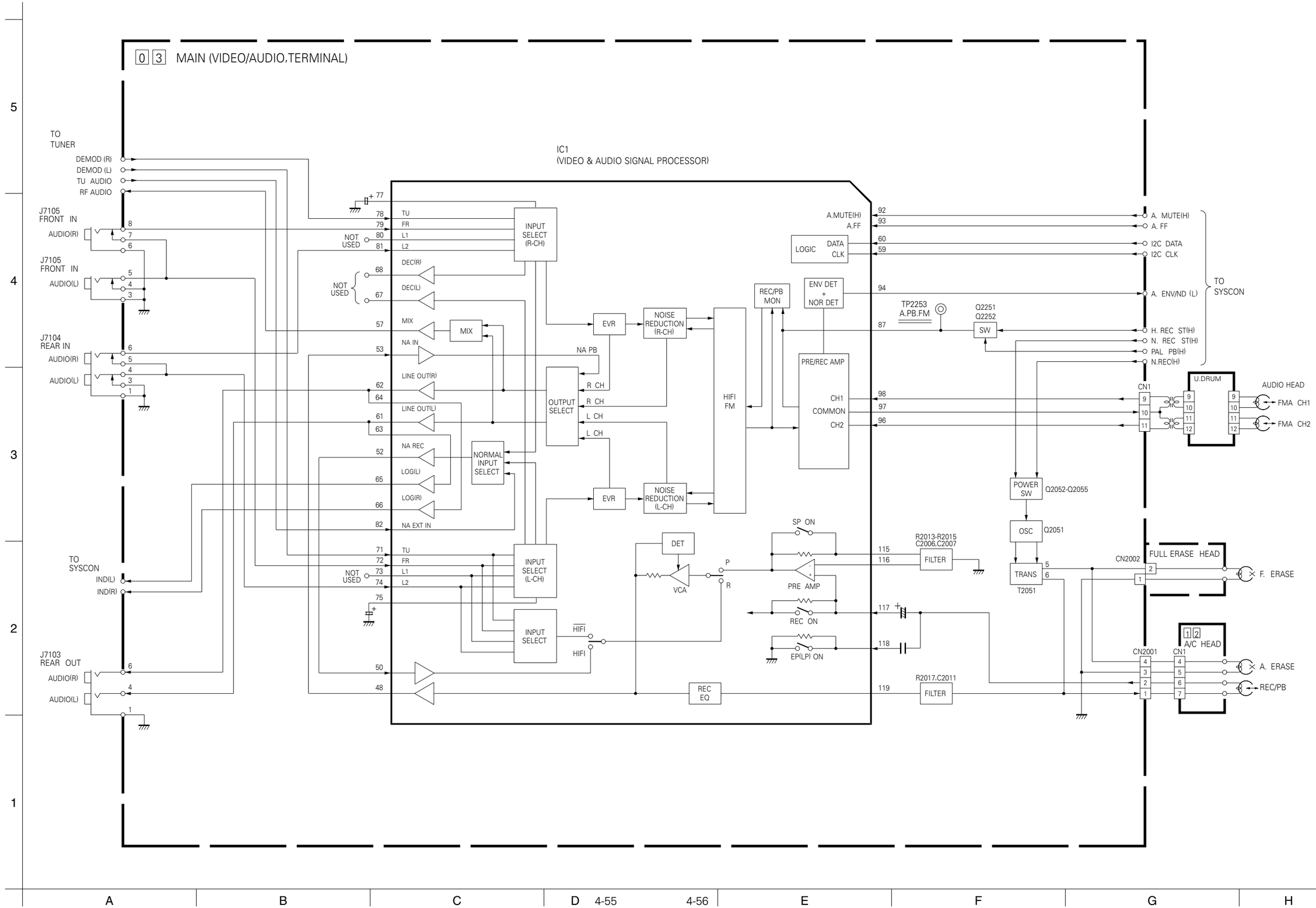
4.26 VIDEO BLOCK DIAGRAM



4.27 AUDIO BLOCK DIAGRAM [HR-J271MS, HR-J471MS]



4.28 AUDIO BLOCK DIAGRAM [HR-J677MS, HR-J777MS]



E. & O. E. No.82811 (Sanwa)-V13A1/C1/D1/D15

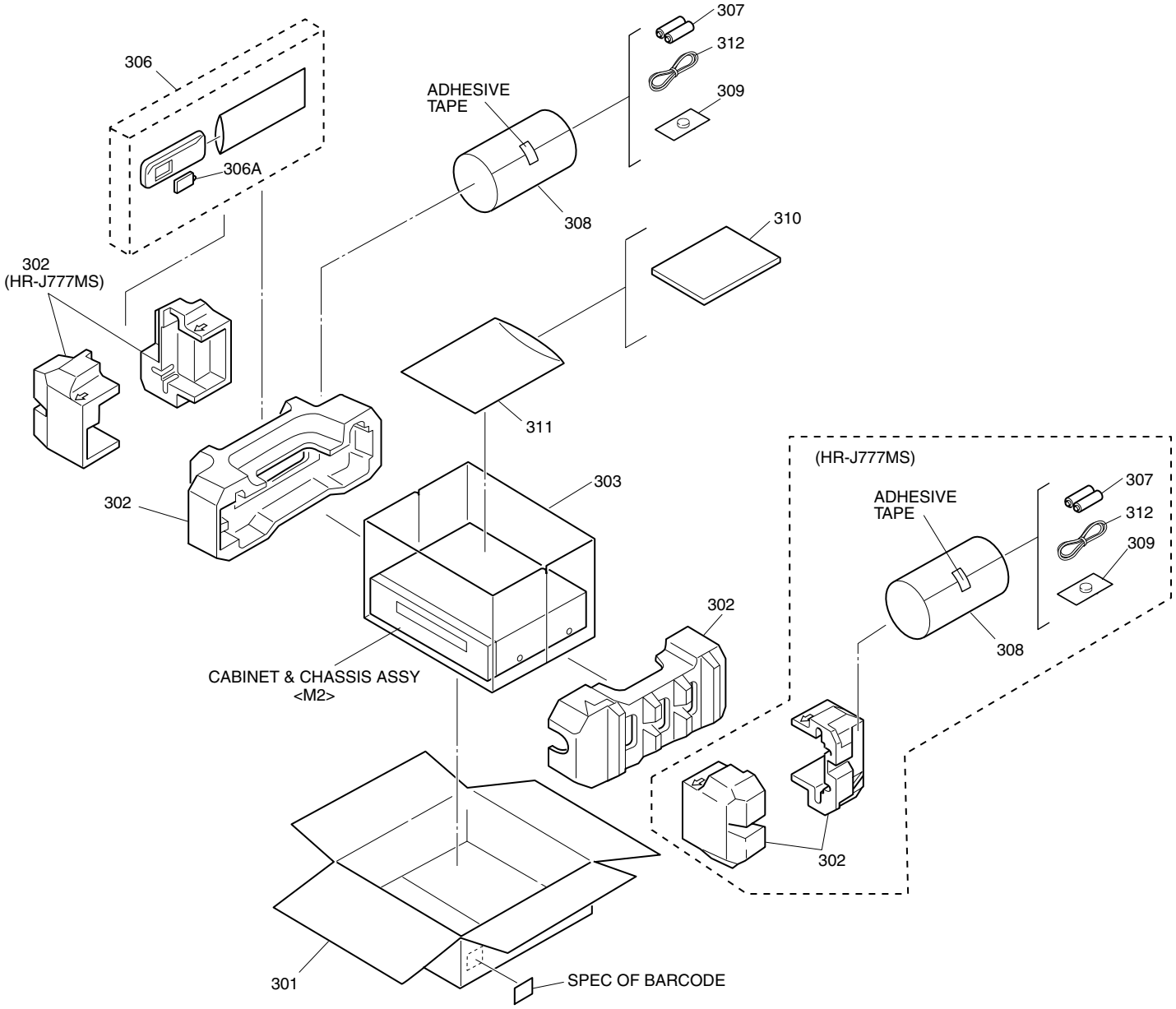
SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

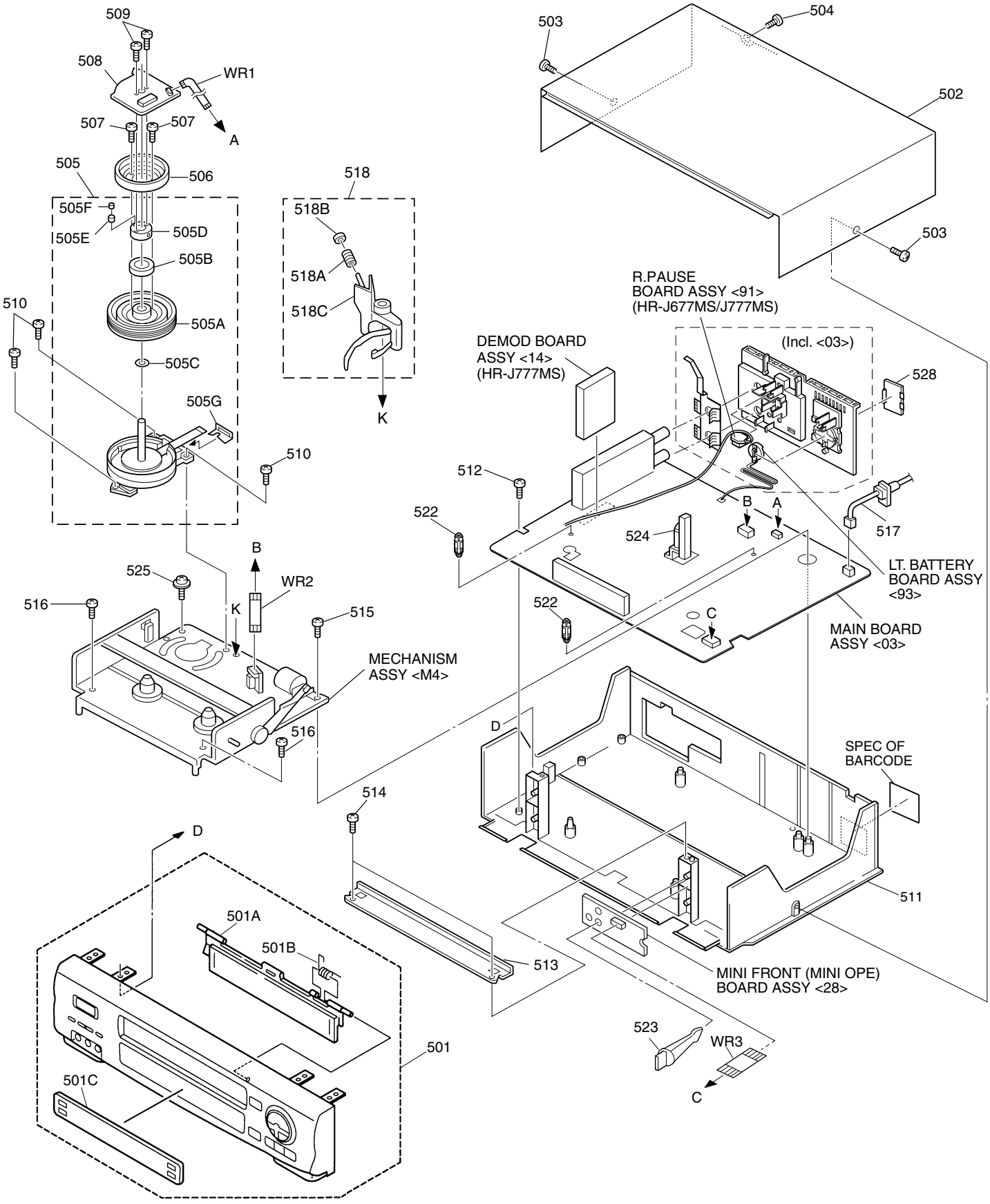
PACKING AND ACCESSORY ASSEMBLY <M1>

		301	LP30658-027A	PACKING CASE,J677MS
			LP30670-022A	PACKING CASE,J271MS
			LP30738-001B	PACKING CASE,J777MS
			LP30670-020A	PACKING CASE,J471MS
		302	LP30355-001D	CUSHION ASSY,J777MS
			LP30671-001C	CUSHION ASSY,J271MS/J471MS
			LP30718-001A	CUSHION ASSY,J677MS
		303	PQM30021-92	POLY BAG,J271MS/J471MS
			PQM30021-93	POLY BAG,J677MS/J777MS
		306	LP20878-008A	REMOTE CONTROLLER
		306A	LP40610-002A	COVER(BATTERY)
		307	–	BATTERY,X2(“R6”TYPE)
		308	QPC02202230P	POLY BAG
	⚠	309	PECA0903	LI BATTERY
	⚠	310	LPT0421-001A	INST.BOOK(EN.CH),J271MS
	⚠		LPT0421-002A	INST.BOOK(RU.AR),J271MS
	⚠		LPT0422-001A	INST.BOOK(EN.CH),J471MS
	⚠		LPT0422-002A	INST.BOOK(RU.AR),J471MS
	⚠		LPT0425-001A	INST.BOOK(EN.CH),J677MS/J777MS
	⚠		LPT0425-002A	INST.BOOK(RU.AR),J677MS/J777MS
		311	QPC02503530P	POLY BAG
		312	PEAC0348-02	RF CABLE

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

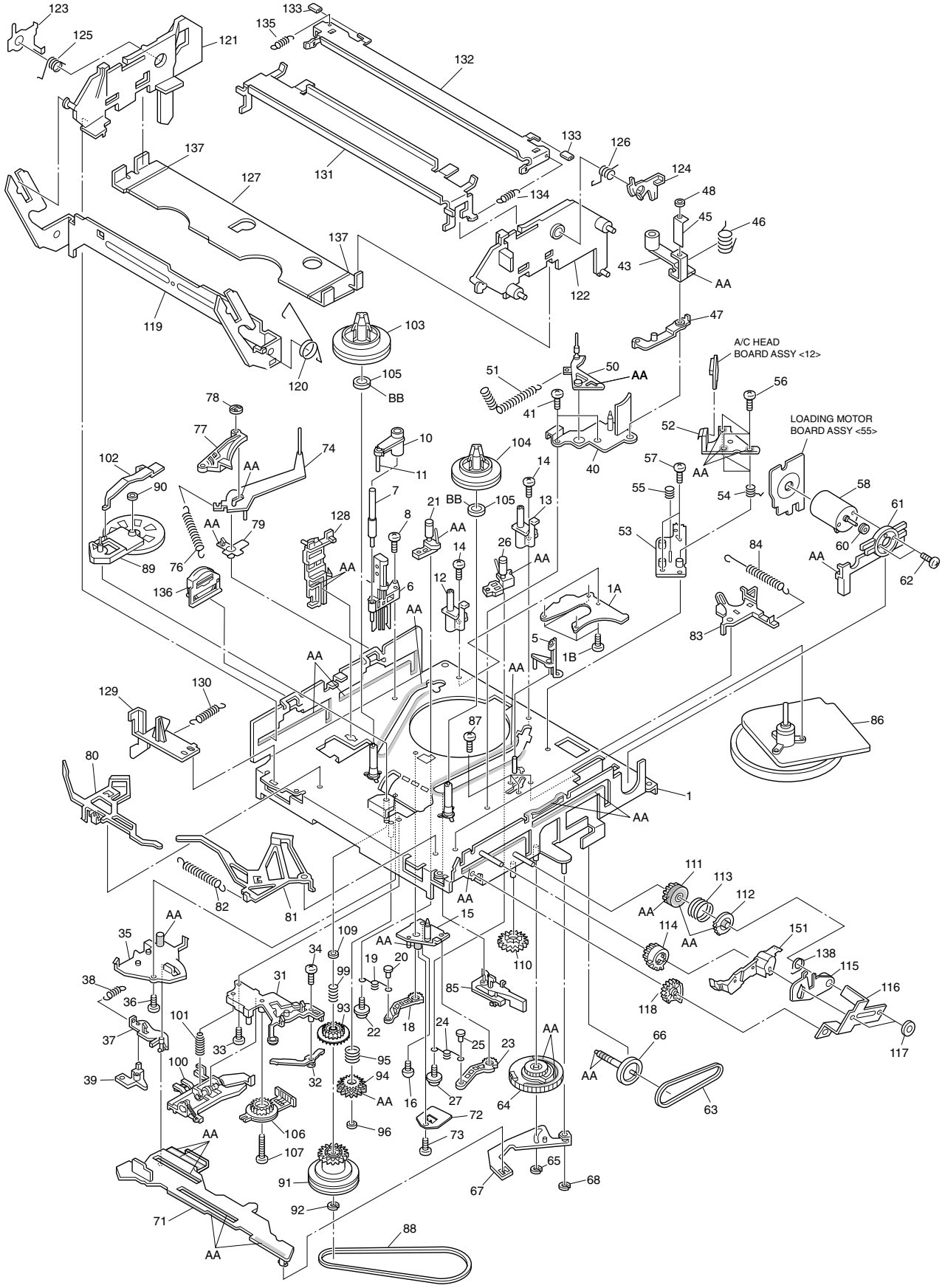
****

CABINET AND CHASSIS ASSEMBLY <M2>

	⚠	501	LP10289-037B	FRONT PANEL ASSY,J777MS
	⚠		LP10289-040B	FRONT PANEL ASSY,J677MS
	⚠		LP10293-015B	FRONT PANEL ASSY,J471MS
	⚠		LP10293-020B	FRONT PANEL ASSY,J271MS
		501A	LP20868-016A	CASSETTE DOOR,J777MS
			LP20868-018A	CASSETTE DOOR,J677MS
			LP20868-019A	CASSETTE DOOR,J471MS
			LP20868-024A	CASSETTE DOOR,J271MS
		501B	PQ46448	TORSION SPRING
		501C	LP20869-051A	DISPLAY WINDOW,J777MS
			LP20869-053A	DISPLAY WINDOW.J677MS
			LP20869-054A	DISPLAY WINDOW,J471MS
			LP20869-064A	DISPLAY WINDOW,J271MS
	⚠	502	LP10013-027C	TOP COVER,J677MS
	⚠		LP10013-031C	TOP COVER,J777MS
	⚠		PQ11898-38-18	TOP COVER,J271MS/J471MS
		503	QYTDSF3010M	SCREW,X2 TOP COVER(SIDE),J271MS/J471MS/J677MS
			QYTDSF3010R	SCREW,X2 TOP COVER(SIDE),J777MS
		504	QYTDSF3010M	SCREW,TOP COVER(REAR)
		505	LP20617-002A	DRUM SUB ASSY,J677MS/J777MS
			LP20617-004A	DRUM SUB ASSY,J471MS
			LP20617-005A	DRUM SUB ASSY,J271MS
		505A	LP20084-003A	UPPER DRUM ASSY,J271MS
			LP20084-006A	UPPER DRUM ASSY,J471MS
			LP20616-002A	UPPER DRUM ASSY,J677MS/J777MS
		505B	PDM4439	CAP
		505C	PDM4444-19-2	WASHER
		505D	LP40572-001A	COLLAR ASSY
		505E	LP40323-001A	CONTACT
		505F	LP30004-014A	COMPRESSION SPRING
		505G	LP40174-001B	FPC PLATE
		506	PDZ0179-1-4	ROTOR ASSY
		507	QYSPSP3006Z	SCREW,X2
	⚠	508	QAR0119-001	STATOR ASSY
		509	QYSPSPH2606Z	SCREW,X2
		510	QYTDST2610Z	SCREW,X3 DRUM
	⚠	511	LP10108-009C	BOTTOM CHASSIS,J677MS/J777MS
	⚠		LP20262-003H	BOTTOM CHASSIS,J271MS/J471MS
		512	QYTDSF3010Z	SCREW,MAIN
		513	LP30312-001B	BRACKET(CHASSIS)
		514	QYTDSF3010Z	SCREW,X2
		515	QYTDSF4012Z	SCREW,MECHA
		516	QYTDSF3010Z	SCREW,X2 MECHA
	⚠	517	QMP4A10-170	POWER CORD
		518	LP40369-001D	CLEANER ASSY
		518A	PQ46418-1-2	CLEANER ROLLER
		518B	PQ46419-1-2	CLEANER
		518C	LP30407-001D	CLEANER ARM
		522	LP40226-001A	PC SUPPORT,X2
		523	LP40628-001B	PC SUPPORT,FRONT
		524	LP40253-001B	STOPPER
		525	PQ40413	SPECIAL SCREW,MECHA
		528	LP30336-001A	CAP,LT BATTERY
		WR1	QUQ212-0518CG	FFC WIRE,DRUM CN3001
		WR2	WJT0005-002A	E-CARD WIRE,A/C HEAD CN2001
		WR3	QUQ112-0914CG	FFC WIRE,FRONT

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

MECHANISM ASSEMBLY <M4>

		1	LP20821-002F	MAIN DECK ASSY
		1A	LP40275-004B	PLATE(SUPPLY)
		1B	QYTDST2605Z	SCREW,X4 PLATE(SUPPLY)
		5	LP30492-002B	GIDE POLE GUARD
		6	NAH0001-001	FULL ERASE HEAD
		7	LP40098-001B	GUIDE POLE(SUPPLY)
		8	QYTDST2608Z	SCREW,FE HEAD
		10	LP30459-002A	TENSION STUD BASE
		11	LP40367-002A	TENSION STUD
		12	LP30409-002C	UV CATCHER 2(SUPPLY)
		11	LP40636-001A	T.STUD BASE BKT
		13	LP30409-002C	UV CATCHER 2(TAKE UP)
		14	QYTPST2606Z	SCREW,X2 UV CATCHER
		15	LP30223-003C	LOADING ARM GEA SHAFT
		16	QYTDST2606Z	SCREW
		18	LP30224-001A	LOADING ARM GEAR(SPPLY)
		19	LP40099-001A	TORSION ARM
		20	LP40100-001A	PIN
		21	LP40101-006A	POLE BASE ASSY(SUPPLY)
		22	QYSPSTG2606Z	SCREW
		23	LP40103-002B	LOADING ARM GEAR(TAKE UP)
		24	LP40099-001A	TORSION ARM
		25	LP40100-001A	PIN
		26	LP40104-006A	POLE BASE ASSY(TAKE UP)
		27	QYSPSTG2606Z	SCREW
		31	LP20233-004B	ROTARY ENCODER GUIDE
		32	LP30499-001C	BRAKE LEVER
		33	QYTPST2606Z	SCREW
		34	QYTPST2608Z	SCREW
		35	LP30226-004D	CONTROL PLATE GUIDE
		36	QYTPST2605Z	SCREW
		37	LP30249-003B	TAKE UP LEVER
		38	LP30003-006A	TENSION SPRING
		39	LP40119-002A	TAKE UP HEAD
		40	LP20234-004B	LID GUIDE
		41	QYTDST2606Z	SCREW,X2
		43	LP40105-002A	PINCH ROLLER ARM ASSY
		45	LP40478-001A	PINCH ROLLER SHEET2
		46	LP40148-002A	TORSION SPRING
		47	LP40149-001C	PRESS LEVER ASSY
		48	LP30016-002A	SLIT WASHER
		50	LP40106-002E	GUIDE ARM ASSY
		51	LP40134-001C	TENSION SPRING
		52	QAH0010-004	AC HEAD
		53	LP30228-001A	HEAD BASE
		54	LP30004-013A	COMPRESSION SPRING,X3
		55	LP40236-001A	COMPRESSION SPRING
		56	LP40213-002B	SPECIAL SCREW,X3
		57	QYTDST2608Z	SCREW,X2
		58	QAR0023-001	LOADING MOTOR
		60	PQ43546-1-2	MOTOR PULLEY
		61	LP30230-001B	MOTOR GUIDE
		62	QYTPSP3003Z	SCREW,X2
		63	LP30005-003A	BELT,LOADING MOTOR
		64	LP20791-002C	CONTROL CAM
		65	PQM30017-24	SLIT WASHER
		66	LP40120-001A	WORM GEAR
		67	LP40107-002A	LINK LEVER ASSY
		68	PQM30017-24	SLIT WASHER
		71	LP10201-003C	CONTROL PLATE
		72	LP40379-001B	CTL BRACKET(1)
		73	QYTDSF2608M	SCREW
		74	LP40108-002A	TENSION ARM ASSY
		76	LP30003-010A	TENSION SPRING
		77	LP40109-003D	TENSION BRAKE ASSY
		78	PQ46302-1-3	ADJUST PIN
		79	LP30232-002A	TENSION ARM BEARING
		80	LP40532-008A	MAIN BRAKE ASSY (SUPPLY)
		81	LP40111-011A	MAIN BRAKE ASSY (TAKE UP)
		82	LP30003-026A	TENSION SPRING
		83	LP40112-001F	SUB BRAKE ASSY(TAKE UP)
		84	LP40357-002A	TENSION SPRING
		85	LP40461-001A	CAPSTAN BRAKE ASSY
		86	QAR0087-004	CAPSTAN MOTOR
		87	QYTDSF2606M	SCREW,X3
		88	LP30005-007A	BELT,CAPSTAN MOTOR
		89	LP40114-008A	IDLER ARM ASSY
		90	LP30016-001A	SLIT WASHER
		91	LP40593-001A	CLUTCH UNIT 3
		92	PQM30017-47	SLIT WASHER
		93	LP40446-002B	CLUTCH GEAR 1
		94	LP40442-001A	DIRECT GEAR
		95	LP40483-002A	COMPRESSION SPRING
		96	LP30016-001A	SLIT WASHER
		99	LP40554-001A	COMPRESSION SPRING
		100	LP40484-001J	CHANGE LEVER ASSY
		101	LP40512-002B	COMPRESSION SPRING
		102	LP30236-002B	IDLER LEVER
		103	LP20237-001B	REEL DISK (SUPPLY)
		104	LP20238-001B	REEL DISK (TAKE UP)
		105	LP30017-015A	SPACER
		106	QSW0554-003	ROTARY ENCODER
		107	QYTPST2620Z	SCREW,ROTARY ENCODER
		109	LP30017-019A	SPACER,C.GEAR 1
		110	LP30237-002B	CASSETTE GEAR
		111	LP30239-002G	LIMIT GEAR(1)
		112	LP30240-002G	LIMIT GEAR(2)
		113	LP40136-001E	TORSION SPRING
		114	LP30242-002A	RELAY GEAR
		115	LP30339-002E	OPENER GUIDE
		116	LP40214-001B	C.H.BRACKET
		117	PQM30017-47	SLIT WASHER,X2
		118	LP30243-001D	DRIVE GEAR
		119	LP20240-001D	DRIVE ARM
		120	LP40137-001A	TORSION SPRING
		121	LP10081-002L	SIDE HOLDER(L)
		122	LP10082-002M	SIDE HOLDER(R)
		123	LP30255-006A	LOCK LEVER(L)
		124	LP30256-001H	LOCK LEVER(R)
		125	LP40168-001A	TORSION SPRING(L)
		126	LP40218-001B	TORSION SPRING(R)
		127	LP30257-001G	CASSETTE HOLDER
		128	LP30244-002G	GUIDE RAIL
		129	LP30245-002E	REC SAFETY LEVER
		130	LP30003-004A	TENSION SPRING
		131	LP20578-001C	TOP GUIDE
		132	LP30500-001C	HOLD PLATE
		133	LP40450-003A	PAD,X2 HOLD PLATE
		134	LP30003-025B	TENSION SPRING
		135	LP30003-024A	TENSION SPRING
		136	LP40481-003A	ROLLER CAM ASSY
		137	LP30019-014A	PAD,X2 CASSETTE HOLDER
		138	LP40545-001A	TORSION SPRING,OPENER GUIDE
		151	LP20324-003A	DOOR OPENER

5.4 ELECTRICAL PARTS LIST

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********				

MAIN BOARD ASSEMBLY(HR-J271MS/J471MS)<03>

		PW1	LPA10088-34D1	MAIN BOARD ASSY,J271MS
			LPA10088-32D1	MAIN BOARD ASSY,J471MS
		IC1	JCP8021-MVD-2	IC
		IC3001	MN101D02GJW	IC
			or MN101DP02JAFJW	IC
		IC3002	BA6956AN	IC
		IC3003	S-80823ANUP-W	IC
			or R3111H231A	IC
		IC3004	M24C04-BN6	IC
			or 24LC04B/P	IC
			or AT24C04-10PC	IC
			or BR24C04W	IC
		IC5301	LA5613	IC
		IC7001	M35500BGP	IC
			or M35500AGP	IC
		IC7002	GP1U291Q	IR DETECT UNIT
			or PNA4652M00YC	IR DETECT UNIT
			or PIC-28143LJ	IR DETECT UNIT
		Q12	2SA1576A/QR/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q22	2SC4081/QRS/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q38	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q39	DTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
			or PDTC144WU	TRANSISTOR
		Q40	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or UN521E	TRANSISTOR
			or RN1309	TRANSISTOR
		Q41	DTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
			or PDTC144WU	TRANSISTOR
		Q42	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q202	2SC4083/NP/-X	TRANSISTOR
		Q901	2SA1576A/QRS/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SB1218A/QRS/-X	TRANSISTOR
		Q2001	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2002	2SC4081/QRS/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q2003	DTA144WU	TRANSISTOR
			or PDTA144WU	TRANSISTOR
			or RN2309	TRANSISTOR
			or UN511E	TRANSISTOR
		Q2051	2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SD1819A/QRS/-X	TRANSISTOR
		Q2052	2SA1576A/QR/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		Q2053	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or UN521E	TRANSISTOR
			or RN1309	TRANSISTOR
		Q2054	2SA1576A/QR/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
			or 2SB1218A/QR/-X	TRANSISTOR
		Q2055	DTC144WU	TRANSISTOR
			or PDTC144WU	TRANSISTOR
			or RN1309	TRANSISTOR
			or UN521E	TRANSISTOR
		Q3001	PTZ-NV16A	IC(PHOTO COUPLER)
		Q3002	PTZ-NV16A	IC(PHOTO COUPLER)
		Q3003	2SD1819A/QRS/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q3004	2SD1819A/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
		Q4001	UN5211	TRANSISTOR
			or PDTC114EU	TRANSISTOR
			or DTC114EU	TRANSISTOR
			or RN1302	TRANSISTOR
		Q4002	2SD1819A/QRS/-X	TRANSISTOR
			or 2SC4081/QRS/-X	TRANSISTOR
			or 2PC4081/R/-X	TRANSISTOR
		Q5101	2SK2632-CB14	POWER MOS FET
			or 2SK2632	POWER MOS FET
			or 2SK2129	POWER MOS FET
			or 2SK2129-LT	POWER MOS FET
		Q5102	2SD2144S/UV/-T	TRANSISTOR
		Q5301	2SB1256	TRANSISTOR,J471MS
		Q5302	DTC114TU	TRANSISTOR,J471MS
			or PDTC114TU	TRANSISTOR,J471MS
			or RN1311	TRANSISTOR,J471MS
			or UN5215	TRANSISTOR,J471MS
		Q5303	2SD2144S/UV/-T	TRANSISTOR
		Q6030	2SB1218A/RS/-X	TRANSISTOR
		Q6501	DTC114EU	TRANSISTOR
			or PDTC114EU	TRANSISTOR
			or UN5211	TRANSISTOR
			or RN1302	TRANSISTOR
		D1	1SS133	DIODE
			or 1SS270A	DIODE
		D2	1SS133	DIODE
			or 1SS270A	DIODE
		D4	1SS133	DIODE,J471MS
			or 1SS270A	DIODE,J471MS
		D5	1SS133	DIODE,J471MS
			or 1SS270A	DIODE,J471MS
		D3001	LNB2301L01VI	LE DIODE
		D3002	1SS133	DIODE
			or 1SS270A	DIODE
		D3004	11ES2	DIODE
			or 1A3G	DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		D3005	11ES2	DIODE
			or 1A3G	DIODE
		D3006	RD33ES/B2/-T2	ZENER DIODE
			or MTZJ33B	ZENER DIODE
	⚠	D3008	RB721Q-40-T2	SB DIODE
		D3009	DA204U	DIODE
		D3013	DA204U	DIODE
		D3015	DAN202U	DIODE
		D4003	1SS133	DIODE
			or 1SS270A	DIODE
		D5001	S1WB/A/60-4102	BRIDGE DIODE
			or S1WB(A)60F4072X	BRIDGE DIODE
			or S1WB/A/60-X	BRIDGE DIODE
		D5101	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS4	FR DIODE
		D5102	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS4	FR DIODE
		D5103	1SS133	DIODE
			or 1SS270A	DIODE
		D5105	1SS133	DIODE
			or 1SS270A	DIODE
		D5201	AU01Z	FR DIODE
			or 10ELS2	FR DIODE
		D5203	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or PG104RS	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
		D5204	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
			or PG104RS	FR DIODE
		D5205	AU01Z	FR DIODE
			or PG104RS	FR DIODE
			or 10ELS2	FR DIODE
			or ERA18-02-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
	⚠	D5207	AK04	DIODE
	⚠		or 1S4	SB DIODE
	⚠		or 11EQS04	SB DIODE
		D5209	10ELS2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or PG104RS	FR DIODE
			or ERA18-02-T2	FR DIODE
		D5210	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
			or PG104RS	FR DIODE
		D5211	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or PG104RS	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
		D5301	MTZJ15A	ZENER DIODE
			or RD15ES/B1/-T2	ZENER DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		D5302	MTZJ6.8A	ZENER DIODE	
			or RD6.8ES/B1/-T2	ZENER DIODE	
		D5303	MTZJ27C	ZENER DIODE	
			or RD27ES/B3/-T2	ZENER DIODE	
		D5304	1SS133	DIODE	
			or 1SS270A	DIODE	
		D5305	11ES2	DIODE,J471MS	
			or 1A3G	DIODE,J471MS	
			or ERA15-02-T2	DIODE,J471MS	
		D6002	HZ30-2L-T2	ZENER DIODE	
			or HZ30-2LTD	Z DIODE (M)	
		D7002	RD9.1ES/B2/-T2	ZENER DIODE	
			or UZ9.1BSB	ZENER DIODE	
			or MTZJ9.1B	ZENER DIODE	
		D7004	1SS133	DIODE	
		D7009	SLR-325VC-T	LE DIODE	
		R1	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R3	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		R6	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R7	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R8	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R9	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R12	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
		R37	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R42	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R44	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		R45	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R46	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R49	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R71	NRSA02J-0R0X	MG RESISTOR,J271MS	0Ω,1/10W
		R77	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R90	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R92	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R93	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R95	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R104	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R201	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R202	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R203	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R204	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R210	NRSA02J-332X	MG RESISTOR,J471MS	3.3kΩ,1/10W
			NRSA02J-562X	MG RESISTOR,J271MS	5.6kΩ,1/10W
		R211	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R901	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R904	QRE123J-331X	RESISTOR	330Ω,1/2W
		R905	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R911	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R912	NRSA02J-750X	MG RESISTOR,J471MS	75Ω,1/10W
		R2001	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2003	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2004	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2005	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2006	NRSA02J-563X	MG RESISTOR,J471MS	56kΩ,1/10W
		R2007	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R2008	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2009	NRSA02J-682X	MG RESISTOR,J471MS	6.8kΩ,1/10W
		R2010	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2013	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2014	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R2015	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R2016	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2017	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2054	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		R2056	NRSA02J-820X	MG RESISTOR	82Ω,1/10W
		R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2602	NRSA02J-101X	MG RESISTOR,J471MS	100Ω,1/10W
		R2603	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3001	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3002	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3005	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3007	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3008	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3014	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3016	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3017	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3018	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3021	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3022	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3027	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3029	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3031	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3035	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3043	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3046	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3060	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3078	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3079	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3080	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3081	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3083	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3085	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3086	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3087	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3090	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3092	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3094	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3096	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3097	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3098	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3201	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3202	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3204	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R3205	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R3206	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3207	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3208	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3209	QRE141J-181Y	RESISTOR	180Ω,1/4W
		R3210	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3211	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3212	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3213	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3214	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3215	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3216	NRSA02J-474X	MG RESISTOR	470kΩ,1/10W
		R3217	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R3219	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3220	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3222	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3223	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R3224	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3226	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3227	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3232	QRE141J-104Y	RESISTOR	100kΩ,1/4W
		R3233	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3234	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
	⚠	R3235	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3237	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R3238	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R4001	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
		R4002	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R4003	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4006	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R4010	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R4011	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R4012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R4018	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4019	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4020	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4022	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R4024	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4025	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R5101	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5102	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5103	QRE141J-683Y	RESISTOR	68kΩ,1/4W
		R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
		R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R5107	QRE121J-331Y	RESISTOR	330Ω,1/2W
		R5108	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R5109	QRE141J-681Y	RESISTOR	680Ω,1/4W
		R5110	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R5111	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R5112	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
	⚠	R5304	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
		R5305	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5306	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R5308	NRSA02J-472X	MG RESISTOR,J471MS	4.7kΩ,1/10W
		R5309	NRSA02J-222X	MG RESISTOR,J471MS	2.2kΩ,1/10W
		R5319	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5327	NRSA02J-303X	MG RESISTOR	30kΩ,1/10W
		R6020	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6021	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6022	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6023	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6030	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6031	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R6032	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R6033	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R6050	QRE141J-101Y	RESISTOR	100Ω,1/4W
		R6051	NRSA02J-101X	MG RESISTOR	100Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R6052	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7001	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7002	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7003	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7004	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7013	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7017	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7021	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7022	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7023	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7024	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R7030	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7031	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7032	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7033	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7034	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R7037	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R7040	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		C1	NCB21EK-104X	CAPACITOR,J471MS	0.1μF,25V
			NCB21HK-103X	CAPACITOR,J271MS	0.01μF,50V
		C2	NCB21EK-104X	CAPACITOR,J471MS	0.1μF,25V
			NCB21HK-103X	CAPACITOR,J271MS	0.01μF,50V
		C3	NCB21EK-104X	CAPACITOR,J471MS	0.1μF,25V
		C4	NCB21EK-104X	CAPACITOR,J471MS	0.1μF,25V
		C5	QEKJ0JM-227	E CAPACITOR	220μF,6.3V
		C6	NCB11EK-104X	CAPACITOR	0.1μF,25V
		C8	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C10	NDC21HJ-151X	CAPACITOR	150pF,50V
		C11	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C12	NDC21HJ-470X	CAPACITOR	47pF,50V
		C13	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C14	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C15	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C16	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C17	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C18	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C19	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C20	QEPF1HM-105	NP E CAPACITOR	1μF,50V
		C21	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C22	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C23	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C24	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C25	NDC21HJ-5R0X	CAPACITOR	5pF,50V
		C27	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C28	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C29	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C30	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
		C31	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C32	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C33	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C34	NCB21EK-224X	CAPACITOR	0.22μF,25V
		C35	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C36	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C37	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C38	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C39	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C40	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C51	QERF1HM-105	E CAPACITOR,J471MS	1μF,50V
		C54	NCB21EK-103X	CAPACITOR	0.01μF,25V
		C62	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C64	NDC21HJ-220X	CAPACITOR	22pF,50V
		C65	NCB21AK-105X	CAPACITOR	1μF,10V
		C81	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C89	NRSA02J-0R0X	MG RESISTOR,J271MS	0Ω,1/10W
		C90	NRSA02J-0R0X	MG RESISTOR,J271MS	0Ω,1/10W
		C106	NCB21HK-821X	CAPACITOR	820pF,50V
		C108	NDC21HJ-680X	CAPACITOR	68pF,50V
		C109	NCB21CK-224X	CAPACITOR	0.22μF,16V
		C110	NDC21HJ-820X	CAPACITOR	82pF,50V
		C112	NDC21HJ-120X	CAPACITOR	12pF,50V
		C113	NDC21HJ-181X	CAPACITOR	180pF,50V
		C114	NDC21HJ-181X	CAPACITOR	180pF,50V
		C201	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C202	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C203	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C205	NDC21HJ-101X	CAPACITOR	100pF,50V
		C207	NCF21CZ-105X	CAPACITOR	1μF,16V
		C208	NDC21HJ-101X	CAPACITOR	100pF,50V
		C209	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C210	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C211	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C212	NDC21HJ-271X	CAPACITOR	270pF,50V
		C901	QETN0JM-477	E CAPACITOR	470μF,6.3V
		C903	QEKJ1CM-476	E CAPACITOR	47μF,16V
		C904	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C2001	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2002	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C2003	QEKC1CM-476	E CAPACITOR	47μF,16V
		C2005	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2006	NCB21HK-123X	CAPACITOR	0.012μF,50V
		C2007	QEKJ1CM-226	E CAPACITOR	22μF,16V
		C2008	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2009	NCB21HK-102X	CAPACITOR	0.001μF,50V
		C2010	NCB21HK-152X	CAPACITOR	0.0015μF,50V
		C2011	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2012	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
		C2051	QCBB1HJ-331	CAPACITOR	330pF,50V
		C2052	QFV91HJ-823	F CAPACITOR	0.082μF,50V
		C2053	NCB21HK-472X	CAPACITOR	0.0047μF,50V
		C2054	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C2055	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C3001	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3002	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3003	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C3008	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3013	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C3016	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3017	NDC21HJ-220X	CAPACITOR	22pF,50V
		C3018	QAT3725-300Z	TRIM CAPACITOR,TIMER CLOCK	
		C3019	NDC21HJ-100X	CAPACITOR	10pF,50V
		C3020	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3022	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3023	NCF21CZ-105X	CAPACITOR	1μF,16V
		C3024	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C3025	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3028	QETN0JM-108	E CAPACITOR	1000μF,6.3V
		C3029	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3030	QEKJ0JM-227	E CAPACITOR	220μF,6.3V
		C3035	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C3036	QERF0JM-107	E CAPACITOR	100μF,6.3V
		C3048	NCB21HK-103X	CAPACITOR	0.01μF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C3049	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3050	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3052	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3053	QDYB1CM-103Y	CAPACITOR	0.01µF,16V
		C3054	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C4001	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4002	QEKJ1HM-224	E CAPACITOR	0.22µF,50V
		C4004	QERF0JM-336	E CAPACITOR	33µF,6.3V
		C4006	NCB21EK-563X	CAPACITOR	0.056µF,25V
		C4007	NCB21HJ-103X	CAPACITOR	0.01µF,50V
		C4008	QERF0JM-476	E CAPACITOR	47µF,6.3V
		C4009	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4010	QERF0JM-476	E CAPACITOR	47µF,6.3V
		C4011	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C4012	NDC21HJ-471X	CAPACITOR	470pF,50V
		C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4015	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4016	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C4017	NCB21HJ-103X	CAPACITOR	0.01µF,50V
		C4019	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C4022	NDC21HJ-101X	CAPACITOR	100pF,50V
	⚠	C5001	QFZ9073-683	F CAPACITOR	0.068µF,250V
	⚠	C5004	QCZ9071-222	CAPACITOR	0.0022µF,250V
		C5006	QEZ0374-826	E CAPACITOR	82µF,400V
		C5101	QCZ0212-472	CAPACITOR	0.0047µF,1kV
		C5102	QCZ0302-330Z	CAPACITOR	33pF,1kV
		C5104	QETN1HM-105	E CAPACITOR	1µF,50V
		C5105	QFN31HJ-183	F CAPACITOR	0.018µF,50V
		C5106	QCBB1HJ-271	CAPACITOR	270pF,50V
		C5107	QFV91HJ-104	F CAPACITOR	0.1µF,50V
		C5201	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5202	QEMT1CM-827	E CAPACITOR	820µF,16V
		C5203	QEMT1AM-687	E CAPACITOR	680µF,10V
		C5204	QETN2AM-475	E CAPACITOR	4.7µF,100V
		C5205	QETN1HM-106	E CAPACITOR	10µF,50V
		C5206	QEMU1EM-187	E CAPACITOR	180µF,25V
		C5207	QETN1CM-227	E CAPACITOR	220µF,16V
		C5208	QETN1AM-227	E CAPACITOR	220µF,10V
		C5301	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5302	QETN1HM-106	E CAPACITOR	10µF,50V
		C5303	QETN1CM-107	E CAPACITOR	100µF,16V
		C5304	QFLC1HJ-563Z	F CAPACITOR	0.056µF,50V
		C5305	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C5306	QETN1AM-107	E CAPACITOR	100µF,10V
		C5307	QETN1AM-476	E CAPACITOR	47µF,10V
		C5321	NCF21CZ-105X	CAPACITOR,J471MS	1µF,16V
		C6007	QEKC1CM-107	E CAPACITOR	100µF,16V
		C6012	QETJ1CM-107	E CAPACITOR	100µF,16V
		C6014	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C6020	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6021	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6022	NDC21HJ-101X	CAPACITOR	100pF,50V
		C6031	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C6519	NCB21HK-473X	CAPACITOR	0.047µF,50V
		C7001	QDGB1HK-102Y	CAPACITOR	0.001µF,50V
		C7002	QEKJ1HM-106	E CAPACITOR	10µF,50V
		C7007	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7008	NCB21EK-223X	CAPACITOR	0.022µF,25V
		C7009	NDC21HJ-220X	CAPACITOR	22pF,50V
		C7010	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C7011	QEKJ0JM-227	E CAPACITOR	220µF,6.3V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C7013	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C7014	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C7019	NCB21EK-223X	CAPACITOR	0.022µF,25V
		L1	QQL29BJ-100Z	COIL	10µH
		L2	QQL29BJ-101Z	COIL	100µH
		L3	QQL29BJ-100Z	COIL	10µH
		L4	QQL29BJ-100Z	COIL	10µH
		L5	QQL29BJ-100Z	COIL	10µH
		L11	QQL01BJ-120Z	COIL	12µH
		L13	QQL231J-330Y	COIL	33µH
		L24	QQL231J-270Y	COIL	27µH
		L27	QQL231J-330Y	COIL	33µH
		L28	QQL231J-680Y	COIL	68µH
		L201	QQL29BJ-100Z	COIL	10µH
		L203	QQL231J-4R7Y	COIL	4.7µH
		L204	QQL231J-5R6Y	COIL	5.6µH
		L901	QQL29BJ-100Z	COIL	10µH
		L5201	PELN1184	COIL	33µH
		L5202	PELN1184	COIL	33µH
		L6001	QQL29BJ-100Z	COIL	10µH
		L6002	QQL29BJ-100Z	COIL	10µH
		X1	QAX0576-001	CRYSTAL RESONATOR	
		X2	QAX0575-001	CRYSTAL RESONATOR	
		X3001	QAX0526-001Z	CRYSTAL RESONATOR	
		X3002	QAX0444-001	CRYSTAL RESONATOR	
		S3001	QSW0602-004	PUSH SWITCH,REC.SAFETY	
		S7001	QSW0456-002Z	TACT SWITCH,POWER	
		S7002	QSW0456-002Z	TACT SWITCH,C.SYSTEM	
		S7004	QSW0456-002Z	TACT SWITCH,CH-	
		S7006	QSW0456-002Z	TACT SWITCH,CH+	
		S7010	QSW0456-002Z	TACT SWITCH,SP/LP/EP	
		S7011	QSW0456-002Z	TACT SWITCH,REC	
		S7013	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
		S7015	QSW0456-002Z	TACT SWITCH,PAUSE	
		S7016	QSW0456-002Z	TACT SWITCH,REC LINK	
		K5101	QQR0678-001Z	FERRITE BEAD	
		PC3001	GP3S123	IC(PHOTO SENSOR)	
		PC3002	GP3S123	IC(PHOTO SENSOR)	
	⚠	PC5101	PS2561L1-1/WL/	IC(PHOTO COUPLER)	
		T2051	PELN0832	OSC TRANSFORMER	
	⚠	T5001	QQS0030-002	SW TRANSFORMER	
		TU6001	QAU0151-001	TUNER	
	⚠	TB1	LP20383-006B	TERMINAL BORAD	
		ET1	PQ21623-2-5	EARTH PLATE(RF)	
		DI7001	QLF0031-001	FL TUBE	
		HD1	PQ35479-1-4	HOLDER(FDP),DI7001	
	⚠	HS1	LP40090-001A	HEAT SINK,Q5101	
		SD1	LP30644-001A	SHIELD CASE(PRE)	
		OT1	QYTDST3006Z	SCREW,Q5101	
		J1	QNN0291-002	PIN JACK,A/V IN	
		J2	QNN0292-002	PIN JACK,A//V OUT	
		FC5001	QNG0006-001Z	FUSE CLIP,F5001	
		FC5002	QNG0006-001Z	FUSE CLIP,F5001	
		FW7106	QUM022-30A4A4	PARA RIBON WIRE	
		J7101	QNN0289-002	PIN JACK,FRONT IN	
	⚠	LF5002	QQR0516-001	LINE FILTER	
	⚠	VA5003	QAF0026-621	VARISTOR	
		CN1	QGF1028C2-08	FPC CONNECTOR,(1-8)U.DRUM,J471MS	
			QGF1028C3-04	FPC CONNECTOR,(5-8)U.DRUM,J271MS	
		CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
		CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		CN3001	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR
		CN3002	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA
		CN3003	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR
		CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER
	⚠	CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN
		CN7001	QGF1207C1-09	FPC CONNECTOR,(1-9)MINI FRONT
	⚠	CP4001	ICP-N25	CIRCUIT PROTECTOR
	⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR
	⚠	F5001	QMF51E2-2R0	FUSE T2.0A,AC250V

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MAIN BOARD ASSEMBLY(HR-J677MS/J777MS)<03>

	PW1	LPA10086-16E1	MAIN BOARD ASSY,J777MS
		LPA10086-17D1	MAIN BOARD ASSY,J677MS
	IC1	JCP8020-MSD-2	IC
	IC201	LC74789N-9795	IC (OSD)
	IC3001	HD6432192A73F	IC (MCU)
	IC3002	S-80727AN-DQ-X	IC
		or S-80827ANUP-W	IC
	IC3003	AT24C04-10PC	IC,J677MS
		AT24C08-10PC	IC,J777MS
		or BR24C04W	IC,J677MS
		or BR24C08	IC,J777MS
		or M24C04-BN6	IC,J677MS
		or M24C08-BN6	IC,J777MS
		or S-24C04ADP	IC,J677MS
		or S-24C08ADP	IC,J777MS
		or 24LC04B/P	IC,J677MS
		or 24LC08B/P	IC,J777MS
	IC3004	BA6956AN	IC
	IC5301	LA5613	IC
	IC7001	M35500BGP	IC
		or M35500AGP	IC
	IC7002	GP1U291Q	IR DETECT UNIT
		or PNA4652M00YC	IR DETECT UNIT
		or PIC-28143LJ	IR DETECT UNIT
	Q1	2SC4081/S/-X	TRANSISTOR
	Q2	2SC4081/S/-X	TRANSISTOR
	Q3	2SC4081/S/-X	TRANSISTOR
	Q4	2SC4081/S/-X	TRANSISTOR
	Q22	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q38	2SC4081/QRS/-X	TRANSISTOR
	Q39	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q40	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q41	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q201	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
	Q2001	2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2002	2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
	Q2003	DTA144WU	TRANSISTOR
		or PDTA144WU	TRANSISTOR
		or RN2309	TRANSISTOR
		or UN511E	TRANSISTOR
	Q2051	2SC4081/QRS/-X	TRANSISTOR
		or 2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q2052	2SA1576A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
	Q2053	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2054	2SA1576A/QR/-X	TRANSISTOR
		or 2SB1218A/QR/-X	TRANSISTOR
		or 2PA1576/R/-X	TRANSISTOR
	Q2055	DTC144WU	TRANSISTOR
		or PDTC144WU	TRANSISTOR
		or RN1309	TRANSISTOR
		or UN521E	TRANSISTOR
	Q2251	DTA144WU	TRANSISTOR
		or PDTA144WU	TRANSISTOR
		or RN2309	TRANSISTOR
		or UN511E	TRANSISTOR
	Q2252	DTC114EU	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or RN1302	TRANSISTOR
		or UN5211	TRANSISTOR
	Q3001	2SD1819A/QRS/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q3002	PTZ-NV16	PHOTO TRANSISTOR
		or PTZ-NV16A	PHOTO TRANSISTOR
	Q3003	PTZ-NV16	PHOTO TRANSISTOR
		or PTZ-NV16A	PHOTO TRANSISTOR
	Q3004	2SD1819A/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
	Q3005	2SD1819A/QRS/-X	TRANSISTOR
		or 2SC4081/QRS/-X	TRANSISTOR
		or 2PC4081/R/-X	TRANSISTOR
	Q4001	UN5211	TRANSISTOR
		or PDTC114EU	TRANSISTOR
		or RN1302	TRANSISTOR
		or DTC114EU	TRANSISTOR
	Q5101	2SK2632-CB14	POWER MOS FET
		or 2SK2129-LT	POWER MOS FET
		or 2SK2632	POWER MOS FET
		or 2SK2129	POWER MOS FET
	Q5102	2SD2144S/UV/-T	TRANSISTOR
	Q5303	2SD2144S/UV/-T	TRANSISTOR
	Q6030	2SB1218A/RS/-X	TRANSISTOR

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION
		Q6032	DTC114EU	TRANSISTOR
			or PDTC114EU	TRANSISTOR
			or RN1302	TRANSISTOR
			or UN5211	TRANSISTOR
		Q7105	2SB1218A/QRS/-X	TRANSISTOR
			or 2SA1576A/QRS/-X	TRANSISTOR
			or 2PA1576/R/-X	TRANSISTOR
		D6	MTZJ5.6C	ZENER DIODE
			or RD5.6ES/B3/-T2	ZENER DIODE
		D201	1SS133	DIODE
		D202	1SS133	DIODE
		D203	1SS133	DIODE
		D2101	MTZJ8.2C	ZENER DIODE
		D2201	11ES2	DIODE
			or 1A3G	DIODE,J777MS
		D3001	LNB2301L01VI	LE DIODE
		D3002	1SS133	DIODE
		D3003	RD39ES/B3/-T2	ZENER DIODE
			or MTZJ39C	ZENER DIODE
		D3004	11ES2	DIODE,J777MS
			or 1A3G	DIODE,J777MS
		D3005	11ES2	DIODE,J777MS
			or 1A3G	DIODE,J777MS
	⚠	D3006	RB721Q-40-T2	SB DIODE
		D4001	1SS133	DIODE
		D4002	1SS133	DIODE
		D5001	S1WB/A/60-4102	BRIDGE DIODE
			or S1WB(A)60F4072X	BRIDGE DIODE
			or S1WB/A/60-X	BRIDGE DIODE
		D5101	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS4	FR DIODE
		D5102	AU01	FR DIODE
			or ERA18-04-T2	FR DIODE
			or 10ELS4	FR DIODE
			or 1SR153-400-T2	FR DIODE
		D5103	1SS133	DIODE
			or 1SS270A	DIODE
		D5105	1SS133	DIODE
			or 1SS270A	DIODE
		D5201	AK04	DIODE
			or 1S4	SB DIODE
			or 11EQS04	SB DIODE
		D5203	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
			or PG104RS	FR DIODE
		D5204	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE
			or PG104RS	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
		D5210	AU01Z	FR DIODE
			or PG104RS	FR DIODE
			or 1SR153-400-T2	FR DIODE
			or 10ELS2	FR DIODE
			or ERA18-02-T2	FR DIODE
		D5211	AU01Z	FR DIODE
			or ERA18-02-T2	FR DIODE

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
			or 1SR153-400-T2	FR DIODE	
			or 10ELS2	FR DIODE	
			or PG104RS	FR DIODE	
		D5212	RK14LF-B2	BARRIER DIODE	
			or SB240-F26	SB DIODE	
			or 21DQ04	BARRIER DIODE	
		D5301	MTZJ15C	ZENER DIODE	
			or MTZJ16A	ZENER DIODE	
			or RD16ES/B1/-T2	ZENER DIODE	
			or RD15ES/B3/-T2	ZENER DIODE	
		D5302	MTZJ6.8A	ZENER DIODE	
			or RD6.8ES/B1/-T2	ZENER DIODE	
		D5303	MTZJ27C	ZENER DIODE	
			or RD27ES/B3/-T2	ZENER DIODE	
		D5304	1SS133	DIODE	
			or 1SS270A	DIODE	
		D5306	MTZJ11C	ZENER DIODE	
			or RD11ES/B3/-T2	ZENER DIODE	
		D5320	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		D6002	HZ30-2L-T2	ZENER DIODE	
			or HZ30-2LTD	Z DIODE (M)	
		D7002	RD9.1ES/B2/-T2	ZENER DIODE	
			or UZ9.1BSB	ZENER DIODE	
			or MTZJ9.1B	ZENER DIODE	
		D7004	1SS133	DIODE	
		D7009	SLR-325VC-T	LE DIODE	
		D7101	1SS133	DIODE	
		D7102	1SS133	DIODE	
		R1	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R3	NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W
		R5	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R6	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R7	NRSA02J-821X	MG RESISTOR	820Ω,1/10W
		R9	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R12	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R21	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R22	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R46	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R50	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R77	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R90	NRSA02J-391X	MG RESISTOR	390Ω,1/10W
		R92	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R93	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R104	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R202	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R204	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R213	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R220	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R224	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R225	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2001	NRSA02J-681X	MG RESISTOR	680Ω,1/10W
		R2002	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R2003	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2005	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2006	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2007	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2008	QRE141J-123Y	RESISTOR	12kΩ,1/4W
		R2009	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R2010	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2012	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2013	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W
		R2014	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R2015	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R2016	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2017	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2018	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2019	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2053	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R2054	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2055	NRSA02J-3R3X	MG RESISTOR	3.3Ω,1/10W
		R2056	NRSA02J-820X	MG RESISTOR	82Ω,1/10W
		R2057	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2058	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2059	NRSA02J-473X	MG RESISTOR	47kΩ,1/10W
		R2060	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R2201	QRE141J-151Y	RESISTOR	150Ω,1/4W
		R2202	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R2203	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R2204	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2205	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R2206	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2208	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2209	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R2210	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2211	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2213	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2215	NRSA02J-153X	MG RESISTOR	15kΩ,1/10W
		R2217	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R2218	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2219	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2220	NRSA02J-393X	MG RESISTOR	39kΩ,1/10W
		R2222	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2223	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2224	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2225	QRE141J-153Y	RESISTOR	15kΩ,1/4W
		R2226	NRSA02J-123X	MG RESISTOR	12kΩ,1/10W
		R2227	QRE141J-223Y	RESISTOR	22kΩ,1/4W
		R2228	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R2229	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R2251	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3011	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3012	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3013	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3014	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3015	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3017	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3020	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3022	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3029	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R3030	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3032	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3034	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3035	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3036	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3037	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3038	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3041	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3049	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3050	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3051	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3052	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3053	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3054	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3055	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3056	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3057	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3058	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3060	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3061	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3062	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3066	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3069	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3071	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3072	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3074	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3075	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3076	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R3078	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R3080	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3085	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3086	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3087	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3090	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3104	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R3201	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3202	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3203	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3204	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R3205	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3206	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3207	NRSA02J-183X	MG RESISTOR	18kΩ,1/10W
		R3208	QRE141J-181Y	RESISTOR	180Ω,1/4W
		R3209	QRE141J-273Y	RESISTOR	27kΩ,1/4W
		R3210	NRSA02J-181X	MG RESISTOR	180Ω,1/10W
		R3211	NRSA02J-273X	MG RESISTOR	27kΩ,1/10W
		R3212	QRE141J-474Y	RESISTOR	470kΩ,1/4W
		R3213	NRSA02J-334X	MG RESISTOR	330kΩ,1/10W
		R3214	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3215	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3216	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3217	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R3218	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R3219	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3220	NRSA02J-104X	MG RESISTOR	100kΩ,1/10W
	⚠	R3221	QRE141J-102Y	RESISTOR	1kΩ,1/4W
		R3222	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3223	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R3224	NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W
		R3225	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R3229	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R3230	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R3231	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R3235	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R3236	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W
		R3240	NRSA02J-105X	MG RESISTOR	1MΩ,1/10W
		R4001	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
		R4003	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4004	NRSA02J-561X	MG RESISTOR	560Ω,1/10W
		R4005	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R4007	QRE141J-102Y	RESISTOR	1kΩ,1/4W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R4008	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		R4009	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4010	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4011	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R4012	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R4013	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4015	NRSA02J-223X	MG RESISTOR	22kΩ,1/10W
		R4016	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4017	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4018	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R4019	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R4021	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R5101	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5102	QRE141J-224Y	RESISTOR	220kΩ,1/4W
		R5103	QRE141J-683Y	RESISTOR	68kΩ,1/4W
		R5104	QRG02GJ-683	OMF RESISTOR	68kΩ,2W
		R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω,1W
		R5107	QRE121J-331Y	RESISTOR	330Ω,1/2W
		R5108	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R5109	QRE141J-681Y	RESISTOR	680Ω,1/4W
		R5110	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
		R5111	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5112	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5301	QRE141J-2R2Y	RESISTOR	2.2Ω,1/4W
		R5302	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R5303	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
	⚠	R5304	QRZ9005-221X	FUSI RESISTOR	220Ω,1/4W
		R5305	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R5306	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R5319	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
		R5327	NRSA02J-303X	MG RESISTOR	30kΩ,1/10W
		R6030	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6031	NRSA02J-271X	MG RESISTOR	270Ω,1/10W
		R6032	NRSA02J-0R0X	MG RESISTOR,J777MS	0Ω,1/10W
			NRSA02J-222X	MG RESISTOR,J677MS	2.2kΩ,1/10W
		R6033	NRSA02J-182X	MG RESISTOR,J677MS	1.8kΩ,1/10W
		R6050	QRE141J-101Y	RESISTOR	100Ω,1/4W
		R6051	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6052	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7001	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7002	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7003	NRSA02J-471X	MG RESISTOR	470Ω,1/10W
		R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
		R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7006	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7007	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7008	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7013	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7017	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R7020	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7021	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7022	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7023	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7024	NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W
		R7025	NRSA02J-472X	MG RESISTOR	4.7kΩ,1/10W
		R7030	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
		R7031	NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W
		R7032	NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W
		R7033	NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W
		R7034	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R7037	NRSA02J-563X	MG RESISTOR	56kΩ,1/10W
		R7040	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7121	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7123	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7126	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R7127	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7128	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7130	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R7131	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7132	QRE123J-331X	RESISTOR	330Ω,1/2W
		R7160	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7161	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R7162	NRSA02J-331X	MG RESISTOR	330Ω,1/10W
		R7163	NRSA02J-750X	MG RESISTOR	75Ω,1/10W
		R7204	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		C1	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C2	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C3	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C4	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C5	QEKJ0JM-227	E CAPACITOR	220μF,6.3V
		C6	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C8	NCB21HK-473X	CAPACITOR	0.047μF,50V
		C10	NDC21HJ-151X	CAPACITOR	150pF,50V
		C11	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C12	NDC21HJ-470X	CAPACITOR	47pF,50V
		C14	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C15	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C16	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C17	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C19	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C20	QEQF1HM-105	NP E CAPACITOR	1μF,50V
		C21	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C22	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
		C23	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C24	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C25	NDC21HJ-6R0X	CAPACITOR	6pF,50V
		C27	NCB21HK-223X	CAPACITOR	0.022μF,50V
		C28	QEKJ1HM-335	E CAPACITOR	3.3μF,50V
		C29	NCB21EK-333X	CAPACITOR	0.033μF,25V
		C30	QEKJ1HM-474	E CAPACITOR	0.47μF,50V
		C31	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C32	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C33	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C34	NCB21EK-224X	CAPACITOR	0.22μF,25V
		C35	QDYB1CM-103Y	CAPACITOR	0.01μF,16V
		C36	QERF1EM-475	E CAPACITOR	4.7μF,25V
		C37	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C38	QEKJ0JM-476	E CAPACITOR	47μF,6.3V
		C39	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C40	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C51	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C52	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C53	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C62	NCB21EK-104X	CAPACITOR	0.1μF,25V
		C64	NDC21HJ-220X	CAPACITOR	22pF,50V
		C65	QEKJ1HM-105	E CAPACITOR	1μF,50V
		C69	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C70	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C81	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C94	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		C106	NCB21HK-821X	CAPACITOR	820pF,50V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C108	NDC21HJ-680X	CAPACITOR	68pF,50V
		C109	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C110	NDC21HJ-820X	CAPACITOR	82pF,50V
		C112	NDC21HJ-120X	CAPACITOR	12pF,50V
		C113	NDC21HJ-181X	CAPACITOR	180pF,50V
		C114	NDC21HJ-181X	CAPACITOR	180pF,50V
		C204	NCB21EK-103X	CAPACITOR	0.01µF,25V
		C206	NDC21HJ-330X	CAPACITOR	33pF,50V
		C207	NDC21HJ-330X	CAPACITOR	33pF,50V
		C209	NCB21CK-474X	CAPACITOR	0.47µF,16V
		C210	NDC21HJ-470X	CAPACITOR	47pF,50V
		C211	NDC21HJ-470X	CAPACITOR	47pF,50V
		C214	NCB21CK-224X	CAPACITOR	0.22µF,16V
		C217	NDC21HJ-560X	CAPACITOR	56pF,50V
		C218	NCB21AK-105X	CAPACITOR	1µF,10V
		C222	QERF1HM-105	E CAPACITOR	1µF,50V
		C226	QERF0JM-107	E CAPACITOR	100µF,6.3V
		C2001	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2002	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2003	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C2005	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2006	NCB21HK-123X	CAPACITOR	0.012µF,50V
		C2007	QEKJ1CM-226	E CAPACITOR	22µF,16V
		C2008	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2009	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2010	NCB21HK-152X	CAPACITOR	0.0015µF,50V
		C2011	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2012	QEKC1EM-475	E CAPACITOR	4.7µF,25V
		C2013	NCB21HK-331X	CAPACITOR	330pF,50V
		C2051	NCB21HK-331X	CAPACITOR	330pF,50V
		C2052	QFLC1HJ-823Z	F CAPACITOR	0.082µF,50V
		C2053	NCB21HK-472X	CAPACITOR	0.0047µF,50V
		C2054	NCB21HK-223X	CAPACITOR	0.022µF,50V
		C2055	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2201	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2202	NCB21EK-333X	CAPACITOR	0.033µF,25V
		C2203	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2204	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C2205	QEKJ1HM-105	E CAPACITOR	1µF,50V
		C2206	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2207	QEKJ1CM-476	E CAPACITOR	47µF,16V
		C2208	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2209	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C2210	QEKJ1HM-104	E CAPACITOR	0.1µF,50V
		C2211	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2212	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2213	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2214	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2215	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2216	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2217	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2218	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2219	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2220	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2221	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2222	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2223	QEKJ1HM-474	E CAPACITOR	0.47µF,50V
		C2224	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C2225	QEKJ1EM-475	E CAPACITOR	4.7µF,25V
		C2226	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C2227	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2228	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2251	QEKC1CM-476	E CAPACITOR	47µF,16V
		C2252	QCBB1HK-103	CAPACITOR	0.01µF,50V
		C2253	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2254	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C2255	NDC21HJ-181X	CAPACITOR	180pF,50V
		C3001	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C3002	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3003	QEKJ1HM-106	E CAPACITOR	10µF,50V
		C3004	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3011	QETL0JM-338	E CAPACITOR	3300µF,6.3V
		C3012	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C3013	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3014	QERF0JM-476	E CAPACITOR	47µF,6.3V
		C3016	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3022	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3024	NDC21HJ-120X	CAPACITOR	12pF,50V
		C3025	QAT7001-300Z	TRIM CAPACITOR,TIMER CLOCK	
		C3026	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C3027	QEKJ1CM-106	E CAPACITOR	10µF,16V
		C3030	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C3031	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3032	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3033	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3036	NDC21HJ-180X	CAPACITOR	18pF,50V
		C3037	NDC21HJ-120X	CAPACITOR	12pF,50V
		C3040	NCB21CK-473X	CAPACITOR	0.047µF,16V
		C3045	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4001	QERF0JM-476	E CAPACITOR	47µF,6.3V
		C4002	QDYB1CM-103Y	CAPACITOR	0.01µF,16V
		C4003	NCB21HK-102X	CAPACITOR	0.001µF,50V
		C4004	QERF1CM-226	E CAPACITOR	22µF,16V
		C4005	NCB21HK-222X	CAPACITOR	0.0022µF,50V
		C4006	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C4008	QEQF1HM-105	NP E CAPACITOR	1µF,50V
		C4009	NCB21HK-563X	CAPACITOR	0.056µF,50V
		C4010	NCB21EK-223X	CAPACITOR	0.022µF,25V
		C4011	NCB21CK-104X	CAPACITOR	0.1µF,16V
		C4012	QEKJ1HM-224	E CAPACITOR	0.22µF,50V
		C4013	NCB21HK-563X	CAPACITOR	0.056µF,50V
		C4014	NDC21HJ-101X	CAPACITOR	100pF,50V
		C4015	NCB21HJ-102X	CAPACITOR	0.001µF,50V
		C4016	NDC21HJ-101X	CAPACITOR	100pF,50V
	⚠	C5001	QFZ9073-683	F CAPACITOR	0.068µF,250V
	⚠	C5005	QCZ9071-222	CAPACITOR	0.0022µF,250V
		C5006	QEZ0374-826	E CAPACITOR	82µF,400V
		C5101	QCZ0212-472	CAPACITOR	0.0047µF,1kV
		C5102	QCZ0302-330Z	CAPACITOR	33pF,1kV
		C5104	QETC1HM-105	E CAPACITOR	1µF,50V
		C5105	QFLC1HJ-183Z	F CAPACITOR	0.018µF,50V
		C5106	QCBB1HJ-271	CAPACITOR	270pF,50V
		C5107	QFV91HJ-104	F CAPACITOR	0.1µF,50V
		C5201	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5202	QEMT1CM-827	E CAPACITOR	820µF,16V
		C5203	QEMT1AM-128	E CAPACITOR	1200µF,10V
		C5204	QETN2AM-475	E CAPACITOR	4.7µF,100V
		C5205	QETN1HM-106	E CAPACITOR	10µF,50V
		C5207	QETN1CM-227	E CAPACITOR	220µF,16V
		C5208	QETN1AM-227	E CAPACITOR	220µF,10V
		C5301	QEMU0JM-227	E CAPACITOR	220µF,6.3V
		C5303	QETN1CM-107	E CAPACITOR	100µF,16V

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		C5304	QFLC1HJ-563Z	F CAPACITOR	0.056µF,50V
		C5305	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C5306	QETN1AM-107	E CAPACITOR	100µF,10V
		C5307	QETN1EM-476	E CAPACITOR	47µF,25V
		C6007	QETN1AM-477	E CAPACITOR	470µF,10V
		C6012	QETJ1CM-107	E CAPACITOR	100µF,16V
		C6013	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C6020	NDC21HJ-101X	CAPACITOR,J677MS	100pF,50V
		C6021	NDC21HJ-101X	CAPACITOR,J677MS	100pF,50V
		C6022	NDC21HJ-101X	CAPACITOR,J677MS	100pF,50V
		C6032	NCB21EK-473X	CAPACITOR,J677MS	0.047µF,25V
		C6037	QEKJ1HM-106	E CAPACITOR	10µF,50V
		C6055	NDC21HJ-220X	CAPACITOR	22pF,50V
		C7001	QDGB1HK-102Y	CAPACITOR	0.001µF,50V
		C7007	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7008	NCB21EK-223X	CAPACITOR	0.022µF,25V
		C7009	NDC21HJ-220X	CAPACITOR	22pF,50V
		C7010	NCB21EK-104X	CAPACITOR	0.1µF,25V
		C7011	QEKJ0JM-476	E CAPACITOR	47µF,6.3V
		C7013	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C7014	NCB21HK-103X	CAPACITOR	0.01µF,50V
		C7118	QETN0JM-477	E CAPACITOR	470µF,6.3V
		C7128	QEKJ1CM-107	E CAPACITOR	100µF,16V
		C7129	NCB21EK-104X	CAPACITOR	0.1µF,25V
		L1	QQL29BJ-100Z	COIL	10µH
		L2	QQL29BJ-101Z	COIL	100µH
		L3	QQL29BJ-100Z	COIL	10µH
		L4	QQL29BJ-100Z	COIL	10µH
		L5	QQL29BJ-100Z	COIL	10µH
		L11	QQL01BJ-120Z	COIL	12µH
		L13	QQL071J-330Y	COIL	33µH
		L24	QQL071J-270Y	COIL	27µH
		L27	QQL071J-330Y	COIL	33µH
		L28	QQL071J-680Y	COIL	68µH
		L201	QQL29BK-1R0Z	COIL	1µH
		L203	QQL29BJ-220Z	COIL	22µH
		L206	QQL071J-220Y	COIL	22µH
		L2251	QQL29BJ-100Z	COIL	10µH
		L2252	QQL29BJ-151Z	COIL	150µH
		L5201	PELN1184	COIL	33µH
		L5202	PELN1184	COIL	33µH
		L6001	QQL29BJ-100Z	COIL	10µH
		L6003	QQL29BJ-470Z	COIL	47µH
		X1	QAX0576-001Z	CRYSTAL RESONATOR	
		X2	QAX0575-001Z	CRYSTAL RESONATOR	
		X3001	QAX0445-001	CRYSTAL RESONATOR	
		X3002	QAX0527-001	CRYSTAL RESONATOR	
		S3001	QSW0602-004	PUSH SWITCH,REC SAFETY	
		S7001	QSW0456-002Z	TACT SWITCH,POWER	
		S7002	QSW0456-002Z	TACT SWITCH,C.SYSTEM	
		S7004	QSW0456-002Z	TACT SWITCH,CH-	
		S7006	QSW0456-002Z	TACT SWITCH,CH+	
		S7008	QSW0456-002Z	TACT SWITCH,SP/LP/EP	
		S7010	QSW0456-002Z	TACT SWITCH,DISPLAY	
		S7011	QSW0456-002Z	TACT SWITCH,REC	
		S7013	QSW0456-002Z	TACT SWITCH,STOP/EJECT	
		S7015	QSW0456-002Z	TACT SWITCH,PAUSE	
		S7016	QSW0456-002Z	TACT SWITCH,REC LINK	
		K2251	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		K2252	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
		K2253	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		K5101	QQR0678-001Z	FERRITE BEAD	
		PC3001	GP3S123	IC(PHOTO SENSOR)	
		PC3002	GP3S123	IC(PHOTO SENSOR)	
	⚠	PC5101	PC123F2	PH COUPLER	
		T2051	PELN0832	OSC TRANSFORMER	
	⚠	T5001	QQS0030-002	SW TRANSFORMER	
	⚠	TB1	LP20316-007B	TERMINAL BOARD	
		TU6001	QAU0111-001	TUNER,J777MS	
			QAU0150-002	TUNER,J677MS	
		DI7001	QLF0032-001	FL TUBE	
		HD1	LP30188-001A	HOLDER,DI7001	
		SD1	LP30644-001A	SHIELD CASE(PRE)	
		OT2	QYTDST3006Z	SCREW,Q5101	
		ET1	PQ21623-2-5	EARTH PLATE(RF)	
	⚠	HS1	LP40090-001A	HEAT SINK,Q5101	
		FC5001	QNG0006-001Z	FUSE CLIP	
		FC5002	QNG0006-001Z	FUSE CLIP	
		J7103	QNN0286-002	PIN JACK,REAR OUT	
		J7104	QNN0285-002	PIN JACK,REAR IN	
		J7105	QNN0288-002	PIN JACK,FRONT IN	
	⚠	LF5002	QQR0532-001	LINE FILTER	
		CN1	QGF1028C1-11	FPC CONNECTOR,(1-11)U.DRUM	
		CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
		CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
		CN3001	QGF1207C1-05	FPC CONNECTOR,(1-5)DRUM MDA	
		CN3002	QGB2532J1-02	CONNECTOR,(1-2)LOADING MOTOR	
		CN3003	QGB2015M2-08	CONNECTOR,(1-8)CAPSTAN MOTOR	
		CN3004	QGB2534J2-04	CONNECTOR,(1-4)ROTARY ENCODER	
		CN3005	QGD2503C1-02	CONNECTOR,(1-2)LT.BATTERY	
	⚠	CN5001	QGA7901C3-02	CONNECTOR,(1-2)AC IN	
		CN7003	QGF1207C1-09	FPC CONNECTOR,(1-9)FRONT	
	⚠	CP4001	ICP-N25	CIRCUIT PROTECTOR	
	⚠	CP5301	ICP-N38	CIRCUIT PROTECTOR	
	⚠	CP5302	ICP-N25	CIRCUIT PROTECTOR	
	⚠	F5001	QMF51E2-2R0J1	FUSE	T2.0A,AC250V

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AUDIO CONTROL HEAD BOARD ASSEMBLY <12>

	PW1	LPA10010-01A1	A/C HEAD BOARD ASSY
	CN1	QGF1208F1-07	FPC CONNECTOR

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DEMOD BOARD ASSEMBLY(HR-J777MS) <14>

	PW1	LPA10094-03A	DEMOD BOARD ASSY	
	IC6701	MSP34VCDT	IC	
	Q6701	2SC3936/BC/-X	TRANSISTOR	
	D6701	1SS133	DIODE	
		or 1N4148M	DIODE	
	R6701	NRSA02J-392X	MG RESISTOR	3.9kΩ,1/10W
	R6702	NRSA02J-682X	MG RESISTOR	6.8kΩ,1/10W

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
		R6703	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
		R6704	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6705	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6707	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
		R6708	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6709	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
		R6710	NRSA02J-120X	MG RESISTOR	12Ω,1/10W
		R6711	NRSA02J-684X	MG RESISTOR	680kΩ,1/10W
		R6712	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6714	NRSA02J-102X	MG RESISTOR	1kΩ,1/10W
		R6716	NRSA02J-470X	MG RESISTOR	47Ω,1/10W
		R6719	QRE141J-103Y	RESISTOR	10kΩ,1/4W
		R6720	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		R6721	NRSA02J-562X	MG RESISTOR	5.6kΩ,1/10W
		C6701	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C6702	NCB21HK-222X	CAPACITOR	0.0022μF,50V
		C6703	NDC21HJ-221X	CAPACITOR	220pF,50V
		C6704	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C6707	NDC21HJ-470X	CAPACITOR	47pF,50V
		C6708	NDC21HJ-8R0X	CAPACITOR	8pF,50V
		C6709	NDC21HJ-1R0X	CAPACITOR	1pF,50V
		C6713	NCF21CZ-224X	CAPACITOR	0.22μF,16V
		C6714	NCB21HK-682X	CAPACITOR	0.0068μF,50V
		C6715	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C6716	NCB21HK-682X	CAPACITOR	0.0068μF,50V
		C6717	QEKJ1HM-225	E CAPACITOR	2.2μF,50V
		C6719	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C6720	QEKJ1CM-106	E CAPACITOR	10μF,16V
		C6721	NCB21HK-103X	CAPACITOR	0.01μF,50V
		C6723	NCB21HK-103X	CAPACITOR	0.01μF,50V
		L6701	QQL231J-1R0Y	COIL	1μH
		L6702	QQL231J-3R3Y	COIL	3.3μH
		X6701	QAX0443-001	CRYSTAL RESONATOR	
		K6701	NQR0200-003X	FERRITE BEAD	
		K6702	NQR0200-003X	FERRITE BEAD	
		K6703	NQR0200-003X	FERRITE BEAD	
		K6704	NQR0200-003X	FERRITE BEAD	
		K6705	NQR0200-003X	FERRITE BEAD	
		K6706	NQR0200-003X	FERRITE BEAD	
		BK1	LP40077-001A	BRACKET(BOARD)	
		CN6701	QGG2502K1-10	HEADER PIN	

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MINI FRONT BOARD ASSEEMBLY(HR-J271MS/J471MS)<28>

PW6	LPA10088-01C6	MINI FRONT BOARD ASSY	
R7043	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7044	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7045	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
S7021	QSW0456-002Z	TACT SWITCH,REW	
S7022	QSW0456-002Z	TACT SWITCH,FF	
S7023	QSW0456-002Z	TACT SWITCH,PLAY	
CN7002	QGF1208C1-09	FPC CONNECTOR,(1-9)MAIN	

#	⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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MINI OPE BOARD ASSEEMBLY(HR-J677MS/J777MS)<28>

PW2	LPA10086-02D2	MINI OPE BOARD ASSY	
R7043	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7044	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7045	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
S7021	QSW0456-002Z	TACT SWITCH,REW	
S7022	QSW0456-002Z	TACT SWITCH,FF	
S7023	QSW0456-002Z	TACT SWITCH,PLAY	
CN7005	QGF1208C1-09	FPC CONNECTOR,(1-9)MAIN	

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LOADING MOTOR BOARD ASSEMBLY <55>

PW2	LPA10010-01A2	LOADING MOTOR BOARD ASSY	
CN1	QGB2533K1-02	CONNECTOR	

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R.PAUSE BOARD ASSEMBLY(HR-J677MS/J777MS)<91>

PW3	LPA10086-01D3	R.PAUSE BOARD ASSY	
R7166	NRSA02J-101X	MG RESISTOR	100Ω,1/10W
J7107	PU60612	MINI JACK	
CN7104	QUM022-18A4A4	PARA RIBON WIRE	

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LT.BATTERY BOARD ASSEMBLY(HR-J271MS/J471MS)<93>

PW4	LPA10088-01A4	LT.BATTERY BOARD ASSY	
BT3001	QNZ0032-001	BATTERY HOLDER	

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LT.BATTERY BOARD ASSEMBLY(HR-J677MS/J777MS)<93>

PW4	LPA10086-16B4	LT.BATTERY BOARD ASSY	
HD1	QNZ0032-001	BATTERY HOLDER	
FW7006	QUM022-15A4BF	PARA RIBON WIRE	